

*L'étude de Faisabilité Pour Le Développement des Ressources En Eau
Par Les Barrages Moyens Dans Le Milieu Rurale Au
Royaume Maroc
Rapport Final
Volume V Rapport de Soutien (2.B)
Étude de Faisabilité*

***Rapport de Soutien XVIII: Évaluation
Économique et Financière***

**L'ETUDE DE FAISABILITE
POUR
LE DEVELOPPEMENT DES RESSOURCES EN EAU
PAR
LES BARRAGES MOYENS DANS LE MILIEU RURALE
AU ROYAUME MAROC**

RAPPORT FINAL

**VOLUME V
RAPPORT DE SOUTIEN (2.B)
ÉTUDE DE FAISABILITE**

**RAPPORT XVIII
EVALUATION ÉCONOMIQUE ET FINANCIÈRE**

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RAPPORT XVIII

ESTIMATION ÉCONOMIQUE ET FINANCIÈRE

XVIII1 Généralités

La méthodologie et le processus sus appliqués pour l'estimation économique et financière des projets sont décrits dans le chapitre 10 du rapport principal. Par conséquent, seulement des informations supplémentaires seront fournies dans ce rapport secondaire XVIII.

XVIII2 Analyse Économique

XVIII2.1 Prix Économique des Entrées et des Sorties Agricoles

Les prix économiques des entrées et des sorties agricoles sont estimés pour les deux conditions avec et sans projet en supposant que la qualité des entrées et des sorties serait différente pour chacune des deux conditions.

Les Tableaux XVIII2.1.1 et XVIII2.1.2 montrent respectivement le calcul des prix économiques des collectes agricoles et des entrées pour la condition " sans projet " et la condition " avec projet ".

XVIII2.2 Estimation Économique de l'Étude Alternative d'Irrigation

XVIII2.2.1 Avantages des Plans Alternatifs

Les caractéristiques des plans alternatifs sont présentés dans le Tableau XVIII2.2.1.

L'équipe chargée de l'étude comme indiqué sur le Tableau XVIII2.2.2, a estimé le revenu agricole au niveau des sites du projet dans les conditions actuelles (sans projet). La dépression du coût de la production agricole au niveau du site du projet dans les mêmes conditions, est indiquée sur le Tableau XVIII2.2.3.

Le Tableau XVIII2.2.4 montre le revenu net de la collecte agricole prévu dans la condition " avec projet " et la Tableau XVIII2.2.5 indique le Revenu agricole prévu dans la condition " avec projet ".

L'accroissement du revenu net pour chaque plan alternatif est estimé sur le Tableau XVIII2.2.6.

XVIII2.2.2. Coût Économique du Projet

Les coûts financiers et économiques du projet sont indiqués sur le Tableau XVIII2.2.7 et les coûts économiques annuels sont indiqués sur le Tableau XVIII2.2.8.

XVIII2.2. 3 Résultats de l'Estimation Économique

La marge brute d'autofinancement des projets est présentée sur le Tableau XVIII2.2.9 et les résultats de l'estimation économique des plans alternatifs d'irrigation sont indiqués sur le Tableau XVIII2.2.10.

XVIII2.3 Analyse Économique d'Approvisionnement en Eau de Petite Taille

L'estimation des bénéfices d'approvisionnement en eau de petite taille est décrite dans la Subsection 10.1.4 du rapport final. L'estimation financière et économique des structures est présentée sur le tableau XVIII2.3.1. Les coûts économiques annuels des structures sont présentés sur le tableau XVIII2.3.2. Les analyses des coûts des bénéfices d'approvisionnement en eau par l'utilisation des coûts des ouvrages d'emploi exclusif présentés en tableau XVIII2.3.3.

XVIII2.4 Estimation Économique des Projets

XVIII2.4.1 Bénéfices des Projets

Les bénéfices agricoles ont déjà été discutés dans le cadre de l'étude alternative d'irrigation.

L'estimation des bénéfices liés au contrôle des inondations et de l'érosion est présentée par comparaison des variantes avec projet et sans projet. Dans le cadre de ce projet, seuls les dégâts ayant atteint les récoltes agricoles et les ouvrages agricoles ont été pris en compte car ceux-ci sont les majeurs dégâts vis-à-vis des secteurs du projet. L'importance des dégâts des inondations à la production agricole est estimée par la diminution du revenu net attendu et la perte du coût de production dépensé jusqu'à la survenance des inondations. Les dégâts des inondations et de l'érosion sont estimés sur la base des hypothèses suivantes:

- Les aires susceptibles d'être atteintes par les inondations et l'érosion sont estimées par la même proportion que les aires actuellement atteintes identifiées par l'interview comme indiqué par le Tableau XVIII2.4.1.
- L'importance des inondations déterminée par l'interview est supposée correspondre à 1/5 an d'inondations.
- Aucun dégât n'est supposé comme 1/2 an d'inondations.
- Les inondations sont supposées frapper la région au milieu de culture lorsque la moitié du coût de production aura déjà été dépensée.
- Un taux de dégâts de 100% est envisagé par les inondations et l'érosion tout en considérant un torrent violent pendant les inondations.
- Après inondation, il est supposé que le terrain agricole immergé n'est plus utilisable pour 3 ans à cause de la sédimentation et que le terrain érodé n'est plus utilisable pour 5 ans.

- Les dégâts portés aux ouvrages d'irrigation par les inondations sont supposés être de la même importance que les dégâts de la production agricole causés par les inondations.

En se basant sur les hypothèses ci-dessus, les bénéfices de la maîtrise des inondations et de l'érosion ont été estimés comme l'indique les Tableaux XVIII2.4.2 et XVIII2.4.3.

Le bénéfice indirect (bénéfice économiquement induit) des Projets a été estimé par utilisation du Tableau détaillé des intrants/extrants du Maroc 1990. Selon ce tableau, un investissement du secteur de construction induira des augmentations diversifiées de production dans d'autres secteurs et il créera approximativement 37% de valeur ajoutée vis-à-vis de l'investissement comme calculé dans le Tableau XVIII2.4.4. D'autre part, un investissement pour la production agricole créera approximativement 12% de valeur ajoutée dans d'autres secteurs diversifiés vis-à-vis de l'investissement comme l'indique le Tableau XVIII2.4.5. Ces valeurs ajoutées ont été estimées comme bénéfice indirect des projets.

XVIII.2.4.2 Coût Économique du Projet

Les coûts financiers et économiques comprenant les composantes entières des projets sont indiqués sur le Tableau XVIII2.4.6 et les coûts économiques annuels sont indiqués sur le Tableau XVIII2.4.7.

XVIII.2.4.3 Résultats de l'Estimation

Les analyses économiques des projets ont été conduites pour les deux situations: avec et sans bénéfices indirects (bénéfice économiquement induit). Les marges brutes d'autofinancement des projets sont présentées dans le Tableau XVIII2.4.8.

XVIII Analyse Financière

XVIII.3.1 Coût Financier

En se basant sur les prix actuels du marché et des coûts en date d'Avril 2000, les coûts financiers de construction de projet ont été estimés comme le montre le Tableau XVIII2.4.6.

Le programme annuel de déboursement du coût de projet basé sur le programme de mise en place est présenté dans le Tableau XVIII3.1.1.

XVIII.3.2 Remboursement du Coût de Projet

Le rapport financier de la marge brute d'autofinancement pour le programme de développement proposé en utilisant la condition prévue de revenu et de fonds de projet est préparé comme montré dans le Tableau XVIII3.2.1.

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Rapport de Soutien XVIII
Évaluation Économique et
Financière*

Tables

Table XVIII2.1.1: Calcul du prix économique des collectes et des entrées agricoles (1/3)
(sans projet)

Hard Wheat

	Unit	N'fikh	Taskourt	Timkit	Azghar
FOB at point of export	US\$/ton	107	-	107	107
Freight and insurance	US\$/ton	23	-	23	23
CIF Casablanca	US\$/ton	130	-	130	130
CIF Casablanca	DH/ton	1 388	-	1 388	1 388
(Exchange rate: US\$1 = 10.68 DH)					
Landing and port charges	DH/ton	129	-	129	129
Transportation/distribution	DH/ton	46	-	361	156
Farm gate price (import parity)	DH/ton	1 564	-	1 879	1 673
Actual farm gate price	DH/ton	2 540	-	3 330	3 230
Conversion factor		0.62	-	0.56	0.52

Note: - FOB at point of export: World Bank Commodity Price Data, January 2001

- FOB at point of export is an average price of three years from Jan 1998 to December 2000

- Landing, port charges, transportation, and distribution costs have been converted into economic value by using the standard conversion factor of 0.86.

Soft Wheat

	Unit	N'fikh	Taskourt	Timkit	Azghar
FOB at point of export	US\$/ton	93	93	-	-
Freight and insurance	US\$/ton	23	23	-	-
CIF Casablanca	US\$/ton	116	116	-	-
CIF Casablanca	DH/ton	1 239	1 239	-	-
(Exchange rate: US\$1 = 10.68 DH)					
Landing and port charges	DH/ton	129	129	-	-
Transportation/distribution	DH/ton	46	135	-	-
Farm gate price (import parity)	DH/ton	1 414	1 503	-	-
Actual farm gate price	DH/ton	2 540	2 890	-	-
Conversion factor		0.56	0.52	-	-

Note: - FOB at point of export: World Bank Commodity Price Data, January 2001

- FOB at point of export is an average price of three years from Jan 1998 to December 2000

- Landing, port charges, transportation, and distribution costs have been converted into economic value by using the standard conversion factor of 0.86.

Barley

	Unit	N'fikh	Taskourt	Timkit	Azghar
CIF Casablanca	DH/ton	835	835	835	835
Landing and port charges	DH/ton	129	129	129	129
Transportation/distribution	DH/ton	46	135	361	156
Farm gate price (import parity)	DH/ton	1 010	1 099	1 325	1 120
Actual farm gate price	DH/ton	1 540	2 520	1 980	2 000
Conversion factor		0.66	0.44	0.67	0.56

Note: - CIF Casablanca is estimated based on statistical data of import volume and value kept

by Office of Change, Morocco

- CIF Casablanca is an average price of five years from 1995 to 1999

- Landing, port charges, transportation, and distribution costs have been converted into economic value by using the standard conversion factor of 0.86.

Table XVIII.2.1.1: Calcul du prix économique des collectes et des entrées agricoles (2/3)
(sans projet)

Tomato

	Unit	N'fifikh	Taskourt	Timkit	Azghar
Actual farm gate price	DH/ton	1 440	2 040	2 290	2 070
Standard conversion factor		0.86	0.86	0.86	0.86
Estimated farm gate price	DH/kg	1 238	1 754	1 969	1 780

Note: - The standard conversion factor has been applied on the assumption that most of the crop would be consumed domestically.

Potato

	Unit	N'fifikh	Taskourt	Timkit	Azghar
Actual farm gate price	DH/ton	2 060	2 040	2 340	2 990
Standard conversion factor		0.86	0.86	0.86	0.86
Estimated farm gate price	DH/kg	1 772	1 754	2 012	2 571

Note: - The standard conversion factor has been applied on the assumption that most of the crop would be consumed domestically.

Watermelon

	Unit	N'fifikh	Taskourt	Timkit	Azghar
Actual farm gate price	DH/ton	-	4 000	3 750	-
Standard conversion factor		-	0.86	0.86	-
Estimated farm gate price	DH/ton	-	3 440	3 225	-

Note: - The standard conversion factor has been applied on the assumption that most of the crop would be consumed domestically.

Grape

	Unit	N'fifikh	Taskourt	Timkit	Azghar
Actual farm gate price	DH/ton	2 920	-	-	-
Standard conversion factor		0.86	-	-	-
Estimated farm gate price	DH/ton	2 511	-	-	-

Note: - The standard conversion factor has been applied on the assumption that most of the crop would be consumed domestically.

Olive

	Unit	N'fifikh	Taskourt	Timkit	Azghar
Actual farm gate price	DH/ton	2 070	2 610	2 690	3 040
Standard conversion factor		0.86	0.86	0.86	0.86
Estimated farm gate price	DH/ton	1 780	2 245	2 313	2 614

Note: - The standard conversion factor has been applied on the assumption that most of the crop would be consumed domestically.

Broad Bean

	Unit	N'fifikh	Taskourt	Timkit	Azghar
Actual farm gate price	DH/ton	3 930	3 870	-	3 730
Standard conversion factor		0.86	0.86	-	0.86
Estimated farm gate price	DH/ton	3 380	3 328	-	3 208

Note: - The standard conversion factor has been applied on the assumption that the crop would be used for domestic consumption only.

Table XVIII.2.1.1: Calcul du prix économique des collectes et des entrées agricoles (3/3)
(sans projet)

Almond

	Unit	N'fikh	Taskourt	Timkit	Azghar
Actual farm gate price	DH/ton	-	48 240	-	-
Standard conversion factor		-	0.86	-	-
Estimated farm gate price	DH/ton	-	41 486	-	-

Note: - The standard conversion factor has been applied on the assumption that most of the crop would be consumed domestically.

Dates

	Unit	N'fikh	Taskourt	Timkit	Azghar
Actual farm gate price	DH/ton	-	-	8 000	-
Standard conversion factor		-	-	0.86	-
Estimated farm gate price	DH/ton	-	-	6 880	-

Note: - The standard conversion factor has been applied on the assumption that most of the crop would be consumed domestically.

Fodder

	Unit	Alfalfa	Barley	Straw of cereals
Actual farm gate price	DH/UF	5.20	3.00	3.00
Standard conversion factor		0.86	0.86	0.86
Estimated farm gate price	DH/UF	4.47	2.58	2.58

Note: - The standard conversion factor has been applied on the assumption that fodder would be a non-traded commodity.

Fertilizer

	Unit	Urea (46%N)	TSP (45%P2O5)	P. Chloride (60%K2O)	Other fertilizer	Agricultural chemical
FOB at point of export	US\$/ton	91	144	113		
Freight and insurance	US\$/ton	23	23	23		
CIF Casablanca	US\$/ton	114	167	136		
CIF Casablanca (Exchange rate: US\$1 = 10.68 DH)	DH/ton	1 218	1 784	1 452		
Landing and port charges	DH/ton	129	129	129	Average of fertilizer	Average of fertilizer
Transportation/distribution	DH/ton	46	46	46		
Import parity value	DH/ton	1 393	1 959	1 628		
Actual market price	DH/ton	1 639	1 947	2 280		
Conversion factor		0.85	1.01	0.71	0.85	0.85

Note: - FOB at point of export: World Bank Commodity Price Data, January 2001

- FOB at point of export is an average price of three years from Jan 1998 to December 2000

- Landing, port charges, transportation, and distribution costs have been converted into economic value by using the standard conversion factor of 0.86.

- The conversion factor for agricultural chemical is assumed as an average of fertilizers.

Table XVIII.2.1.2: Calcul du prix économique des collectes et des entrées agricoles (1/5)
(avec projet)

Hard Wheat

	Unit	N'fifikh	Taskourt	Timkit	Azghar
FOB at point of export	US\$/ton	107	-	107	107
Freight and insurance	US\$/ton	23	-	23	23
CIF Casablanca	US\$/ton	130	-	130	130
CIF Casablanca	DH/ton	1 388	-	1 388	1 388
(Exchange rate: US\$1 = 10.68 DH)					
Landing and port charges	DH/ton	129	-	129	129
Transportation/distribution	DH/ton	46	-	361	156
Farm gate price (import parity)	DH/ton	1 564	-	1 879	1 673
Actual farm gate price	DH/ton	2 540	-	3 330	3 230
Conversion factor		0.62	-	0.56	0.52

Note: - FOB at point of export: World Bank Commodity Price Data, January 2001
 - FOB at point of export is an average price of three years from Jan 1998 to December 2000
 - Landing, port charges, transportation, and distribution costs have been converted into economic value by using the standard conversion factor of 0.86.

Soft Wheat

	Unit	N'fifikh	Taskourt	Timkit	Azghar
FOB at point of export	US\$/ton	93	93	-	-
Freight and insurance	US\$/ton	23	23	-	-
CIF Casablanca	US\$/ton	116	116	-	-
CIF Casablanca	DH/ton	1 239	1 239	-	-
(Exchange rate: US\$1 = 10.68 DH)					
Landing and port charges	DH/ton	129	129	-	-
Transportation/distribution	DH/ton	46	135	-	-
Farm gate price (import parity)	DH/ton	1 414	1 503	-	-
Actual farm gate price	DH/ton	2 540	2 890	-	-
Conversion factor		0.56	0.52	-	-

Note: - FOB at point of export: World Bank Commodity Price Data, January 2001
 - FOB at point of export is an average price of three years from Jan 1998 to December 2000
 - Landing, port charges, transportation, and distribution costs have been converted into economic value by using the standard conversion factor of 0.86.

Barley

	Unit	N'fifikh	Taskourt	Timkit	Azghar
CIF Casablanca	DH/ton	835	835	835	835
Landing and port charges	DH/ton	129	129	129	129
Transportation/distribution	DH/ton	46	135	361	156
Farm gate price (import parity)	DH/ton	1 010	1 099	1 325	1 120
Actual farm gate price	DH/ton	1 540	2 520	1 980	2 000
Conversion factor		0.66	0.44	0.67	0.56

Note: - CIF Casablanca is estimated based on statistical data of import volume and value kept by Office of Change, Morocco
 - CIF Casablanca is an average price of five years from 1995 to 1999
 - Landing, port charges, transportation, and distribution costs have been converted into economic value by using the standard conversion factor of 0.86.

Tomato

	Unit	N'fifikh	Taskourt	Timkit	Azghar
FOB Casablanca	DH/ton	4 114	4 114	4 114	4 114
Loading and port charges	DH/ton	129	129	129	129
Collection/transportation	DH/ton	46	135	361	156
Farm gate price (export parity)	DH/ton	3 939	3 850	3 624	3 829
Farm gate price without project	DH/ton	1 238	1 754	1 969	1 780
Applied farm gate price with project	DH/ton	2 048	2 383	2 466	2 395

Note: - FOB Casablanca is estimated based on statistical data of export volume and value kept by Office of Change, Morocco
 - FOB Casablanca is an average price of five years from 1995 to 1999
 - Loading, port charges, collection, and transportation costs have been converted into economic value by using the standard conversion factor of 0.86.
 - The applied farm gate price with project is estimated on assumption that 30% of the crop is sufficient quality for external trade.

**Table XVIII2.1.2: Calcul du prix économique des collectes et des entrées agricoles (2/5)
(avec projet)**

Potato					
	Unit	N'fifikh	Taskourt	Timkit	Azghar
FOB Casablanca	DH/ton	3 464	3 464	3 464	3 464
Loading and port charges	DH/ton	129	129	129	129
Collection/transportation	DH/ton	46	135	361	156
Farm gate price (export parity)	DH/ton	3 289	3 200	2 974	3 179
Farm gate price without project	DH/ton	1 722	1 754	2 012	2 571
Applied farm gate price with project	DH/ton	1 923	1 899	2 109	2 632

Note: - FOB Casablanca is estimated based on statistical data of export volume and value kept by Office of Change, Morocco
 - FOB Casablanca is an average price of five years from 1995 to 1999
 - Loading, port charges, collection, and transportation costs have been converted into economic value by using the standard conversion factor of 0.86.
 - The applied farm gate price with project is estimated on assumption that 10% of the crop is sufficient quality for external trade.

Watermelon					
	Unit	N'fifikh	Taskourt	Timkit	Azghar
Actual farm gate price	DH/ton	-	4 000	3 750	-
Standard conversion factor		-	0.86	0.86	-
Estimated farm gate price	DH/ton	-	3 440	3 225	-

Note: - The standard conversion factor has been applied on the assumption that most of the crop would be consumed domestically.

Grape					
	Unit	N'fifikh	Taskourt	Timkit	Azghar
FOB Casablanca	DH/ton	11 664	-	-	-
Landing and port charges	DH/ton	129	-	-	-
Transportation/distribution	DH/ton	46	-	-	-
Farm gate price (import parity)	DH/ton	11 489	-	-	-
Farm gate price without project	DH/ton	2 511	-	-	-
Applied farm gate price with project	DH/ton	2 601	-	-	-

Note: - FOB Casablanca is estimated based on statistical data of export volume and value kept by Office of Change, Morocco
 - FOB Casablanca is an average price of five years from 1995 to 1999
 - Loading, port charges, collection, and transportation costs have been converted into economic value by using the standard conversion factor of 0.86.
 - The applied farm gate price with project is estimated on assumption that 1% of the crop is sufficient quality for external trade.

Olive					
	Unit	N'fifikh	Taskourt	Timkit	Azghar
Actual farm gate price	DH/ton	2 070	2 610	2 690	3 040
Standard conversion factor		1.13	1.05	0.99	0.99
Estimated farm gate price	DH/ton	2 349	2 739	2 658	3 020

Note: - The average conversion factor of tomato and potato has been applied since most of olive is exported after processing and actual farm gate price of olive is not directly compared with its export parity value.

Broad Bean					
	Unit	N'fifikh	Taskourt	Timkit	Azghar
Actual farm gate price	DH/ton	3 930	3 870	-	3 730
Standard conversion factor		0.86	0.86	-	0.86
Estimated farm gate price	DH/ton	3 380	3 328	-	3 208

Note: - The standard conversion factor has been applied on the assumption that most of the crop would be consumed domestically.

Almond					
	Unit	N'fifikh	Taskourt	Timkit	Azghar
Actual farm gate price	DH/ton	-	48 240	-	-
Standard conversion factor		-	0.86	-	-
Estimated farm gate price	DH/ton	-	41 486	-	-

Note: - The standard conversion factor has been applied on the assumption that most of the crop would be consumed domestically.

**Table XVIII.2.1.2: Calcul du prix économique des collectes et des entrées agricoles (3/5)
(avec projet)**

Dates

	Unit	N'fifikh	Taskourt	Timkit	Azghar
CIF Casablanca	DH/ton	-	-	15 239	-
Landing and port charges	DH/ton	-	-	129	-
Transportation/distribution	DH/ton	-	-	361	-
Farm gate price (import parity)	DH/ton	-	-	15 729	-
Farm gate price without project	DH/ton	-	-	6 880	-
Applied farm gate price with project	DH/ton	-	-	11 305	-

Note: - CIF Casablanca is estimated based on statistical data of import volume and value kept by Office of Change, Morocco
- CIF Casablanca is an average price of five years from 1995 to 1999
- Landing, port charges, transportation, and distribution costs have been converted into economic value by using the standard conversion factor of 0.86.
- The applied farm gate price with project is estimated from an average of export parity value and the farm gate price without project on assumption that 50 % of the crop is sufficient quality for external trade.

Fodder

	Unit	Alfalfa	Barley	Straw of cereals
Actual farm gate price	DH/UF	5.20	3.00	3.00
Standard conversion factor		0.86	0.86	0.86
Estimated farm gate price	DH/UF	4.47	2.58	2.58

Note: - The standard conversion factor has been applied on the assumption that fodder would be a non-traded commodity.

Seed of Hard Wheat

	Unit	N'fifikh	Taskourt	Timkit	Azghar
CIF Casablanca	DH/ton	3 346	-	3 346	3 346
Landing and port charges	DH/ton	129	-	129	129
Transportation/distribution	DH/ton	46	-	361	156
Estimated farm gate price	DH/ton	3 521	-	3 836	3 631
Actual farm gate price	DH/ton	4 000	-	4 000	4 000
Conversion factor		0.88	-	0.96	0.91

Note: - CIF Casablanca is estimated based on statistical data of import volume and value kept by Office of Change, Morocco
- CIF Casablanca is an average price of five years from 1995 to 1999
- Landing, port charges, transportation, and distribution costs have been converted into economic value by using the standard conversion factor of 0.86.

Seed of Soft Wheat

	Unit	N'fifikh	Taskourt	Timkit	Azghar
CIF Casablanca	DH/ton	2 631	2 631	-	-
Landing and port charges	DH/ton	129	129	-	-
Transportation/distribution	DH/ton	46	135	-	-
Estimated farm gate price	DH/ton	2 806	2 895	-	-
Actual farm gate price	DH/ton	4 000	4 000	-	-
Conversion factor		0.70	0.72	-	-

Note: - CIF Casablanca is estimated based on statistical data of import volume and value kept by Office of Change, Morocco
- CIF Casablanca is an average price of five years from 1995 to 1999
- Landing, port charges, transportation, and distribution costs have been converted into economic value by using the standard conversion factor of 0.86.

Seed of Barley

	Unit	N'fifikh	Taskourt	Timkit	Azghar
CIF Casablanca	DH/ton	3 222	3 222	3 222	3 222
Landing and port charges	DH/ton	129	129	129	129
Transportation/distribution	DH/ton	46	135	361	156
Estimated farm gate price	DH/ton	3 397	3 486	3 712	3 507
Actual farm gate price	DH/ton	4 000	4 000	4 000	4 000
Conversion factor		0.85	0.87	0.93	0.88

Note: - CIF Casablanca is estimated based on statistical data of import volume and value kept by Office of Change, Morocco
- CIF Casablanca is an average price of five years from 1995 to 1999
- Landing, port charges, transportation, and distribution costs have been converted into economic value by using the standard conversion factor of 0.86.

**Table XVIII2.1.2: Calcul du prix économique des collectes et des entrées agricoles (4/5)
(avec projet)**

Seed of Tomato

	Unit	N'fifikh	Taskourt	Timkit	Azghar
Actual farm gate price	DH/kg	820	820	820	820
Standard conversion factor		0.86	0.86	0.86	0.86
Estimated farm gate price	DH/kg	705	705	705	705

Note: - The standard conversion factor has been applied on the assumption that seed of tomato would be a non-traded commodity.

Seed of Potato

	Unit	N'fifikh	Taskourt	Timkit	Azghar
CIF Casablanca	DH/ton	3 853	3 853	3 853	3 853
Landing and port charges	DH/ton	129	129	129	129
Transportation/distribution	DH/ton	46	135	361	156
Estimated farm gate price	DH/ton	4 028	4 117	4 343	4 138
Actual farm gate price	DH/ton	3 500	3 500	3 500	3 500
Conversion factor		1.15	1.18	1.24	1.18

Note: - CIF Casablanca is estimated based on statistical data of import volume and value kept by Office of Change, Morocco
 - CIF Casablanca is an average price of five years from 1995 to 1999
 - Landing, port charges, transportation, and distribution costs have been converted into economic value by using the standard conversion factor of 0.86.

Seed of Watermelon

	Unit	N'fifikh	Taskourt	Timkit	Azghar
Actual farm gate price	DH/kg	-	250	250	-
Standard conversion factor		-	0.86	0.86	-
Estimated farm gate price	DH/kg	-	215	215	-

Note: - The standard conversion factor has been applied on the assumption that seed of watermelon would be a non-traded commodity.

Seedling of Grape

	Unit	N'fifikh	Taskourt	Timkit	Azghar
Actual farm gate price	DH/unit	6.00	-	-	-
Standard conversion factor		0.86	-	-	-
Estimated farm gate price	DH/unit	5.16	-	-	-

Note: - The standard conversion factor has been applied on the assumption that seedling of grape would be a non-traded commodity.

Annual Replacement Cost of Olive

	Unit	N'fifikh	Taskourt	Timkit	Azghar
Actual farm gate price	DH/ha	140	140	140	140
Standard conversion factor		0.86	0.86	0.86	0.86
Estimated farm gate price	DH/kg	120	120	120	120

Note: - The standard conversion factor has been applied on the assumption that a nursery tree of olive would be a non-traded commodity.

Seed of Broad Bean

	Unit	N'fifikh	Taskourt	Timkit	Azghar
FOB Casablanca	DH/ton	10 020	10 020	-	10 020
Loading and port charges	DH/ton	129	129	-	129
Collection/transportation	DH/ton	46	135	-	156
Estimated farm gate price	DH/ton	9 845	9 756	-	9 735
Actual farm gate price	DH/ton	10 000	10 000	-	10 000
Conversion factor		0.98	0.98	-	0.97

Note: - FOB Casablanca is estimated based on statistical data of export volume and value kept by Office of Change, Morocco
 - FOB Casablanca is an average price of five years from 1995 to 1999
 - Loading, port charges, collection, and transportation costs have been converted into economic value by using the standard conversion factor of 0.86.

**Table XVIII.2.1.2: Calcul du prix économique des collectes et des entrées agricoles (5/5)
(avec projet)**

Seedling of Date

	Unit	N'fikh	Taskourt	Timkit	Azghar
Actual farm gate price	DH/tree	-	-	170	-
Standard conversion factor		-	-	0.86	-
Estimated farm gate price	DH/tree	-	-	146	-

Note: - The standard conversion factor has been applied on the assumption that seedling of date would be a non-traded commodity.

Seed of Fodder

	Unit	Alfalfa	Barley	Straw of cereals
Actual farm gate price	DH/kg	360.00	4.00	-
Standard conversion factor		0.86	0.86	-
Estimated farm gate price	DH/kg	309.60	3.44	-

Note: - The standard conversion factor has been applied on the assumption that seed of fodder would be a non-traded commodity.

Fertilizer

	Unit	Urea (46%N)	TSP (45%P2O5)	P. Chloride (60%K2O)	Other fertilizer	Agricultural chemical
FOB at point of export	US\$/ton	91	144	113		
Freight and insurance	US\$/ton	23	23	23		
CIF Casablanca	US\$/ton	114	167	136		
CIF Casablanca (Exchange rate: US\$1 = 10.68 DH)	DH/ton	1 218	1 784	1 452		
Landing and port charges	DH/ton	129	129	129	Average of fertilizer	Average of fertilizer
Transportation/distribution	DH/ton	46	46	46		
Import parity value	DH/ton	1 393	1 959	1 628		
Actual market price	DH/ton	1 639	1 947	2 280		
Conversion factor		0.85	1.01	0.71	0.85	0.85

Note: - FOB at point of export: World Bank Commodity Price Data, January 2001

- FOB at point of export is an average price of three years from Jan 1998 to December 2000

- Landing, port charges, transportation, and distribution costs have been converted into economic value by using the standard conversion factor of 0.86.

- The conversion factor for agricultural chemical is assumed as an average of fertilizers.

Table XVIII.2.1: Plans Alternatifs assujettis à l'évaluation Economique

Project	Alternative	Dam (Annual water resources development)	Irrigation type	Net irrigable area with 80% probability (ha)	Net irrigable area with 20% probability (ha)	Annual average irrigable area (ha)	Net irrigation development area (ha)	Gross irrigation development area (ha)	Applied cropping pattern	Remarks
a	b	c	d	e	f	g	h	i	j	k
N'fifikh (upstream)	NU1	Proposed plan (6.4 Mm3)	Gravity: 100 %	780	1 000	853	1 000	1 250	Improved cropping pattern proposed by JICA team	
	NU2	- ditto -	- ditto -	810	1 030	886	1 030	1 290	Existing cropping pattern	
	NU3	- ditto -	- ditto -	590	740	645	1 000	1 250	To enhance vegetable cultivation	
	NU4	- ditto -	Gravity: 50 % Mechanical: 50 %	900	1 170	984	1 170	1 460	Improved cropping pattern proposed by JICA team	
	NU5	- ditto -	Gravity 100% with pump	780	1 000	853	1 000	1 250	Improved cropping pattern proposed by JICA team	To irrigate farmlands on the left bank just downstream of the dam
N'fifikh (downstream)	ND1	Intake weir and pumping station	Mechanical: 100 % with pump	210	260	228	260	330	Improved cropping pattern proposed by JICA team	Mechanical irrigation only.
	ND2	Small dam at proposed weir location	Mechanical: 100 % with pump	470	590	510	590	740	- ditto -	- ditto -
Taskourt	TA1	Proposed plan (36 Mm3)	Gravity: 100 %	3 530	4 500	3 831	4 500	6 000	Improved cropping pattern proposed by JICA team	Perennial: 900 ha Seasonal: remaining area
	TA2	- ditto -	Gravity: 50 % Mechanical: 50 %	4 060	5 100	4 406	5 100	6 000	- ditto -	- ditto -
	TA3	Small dam (24 Mm3)	Gravity: 100 %	2 500	3 150	2 713	4 500	6 000	- ditto -	- ditto -
	TA4	- ditto -	Gravity: 50 % Mechanical: 50 %	2 880	3 620	3 126	4 500	6 000	- ditto -	- ditto -
Timkit	TI1	Proposed plan	Gravity: 100% with pump wells	1,110 +240 in Ifegh	-	1,450 +240 in Ifegh	3 060	3 825	Improved cropping pattern proposed by JICA team	To irrigate farmlands with sub-surface and surface water except Ifegh irrigated by surface water.
	TI2	- ditto -	- ditto -	1,460 +240 in Ifegh	-	1,330 +240 in Ifegh	3 060	3 825	- ditto -	To irrigate farmlands with sub-surface water except Ifegh irrigated by surface water.
Azghar	AZ1	Proposed plan (14.6 Mm3)	Gravity: 100 %	2 000	-	2 000	2 000	2 350	Improved cropping pattern proposed by JICA team	Negative benefit will be taken into account.

Table XVIII.2.2: Revenu agricole estimé dans les conditions actuelles (sans projet) (1/2)
(Economic Price, DH/ha)

N'fifikh (upstream area)

Crops		Benefit				Expenditure		Net Benefit (DH) g=d-f	
		Occupancy (%) a	Yield		Unit price (DH/kg) c	Benefit (DH) d=a*b*c	Unit cost (DH/ha) e		Net cost (DH) f=e*a
			Qty. b	Unit (ton/ha)					
Cereals 1	Soft wheat	45.5	1.43	(ton/ha)	1.41	920	1 741	792	128
Cereals 2	Hard wheat	30.0	1.14	(ton/ha)	1.56	535	1 908	573	-38
Fodder	Barley	4.6	1 297	UF	2.58	152	1 269	58	94
Legume	Broad bean	4.6	0.66	(ton/ha)	3.38	102	2 068	94	8
Vegetable	Potato	1.8	27.3	(ton/ha)	1.77	880	11 436	208	672
Tree Crop	Grape	4.6	0.84	(ton/ha)	2.51	96	2 622	119	-23
Fodder from cereal 1	-	45.5	725	UF	2.58	851	-	-	851
Fodder from cereal 2	-	30.0	593	UF	2.58	459	-	-	459
Fallow	-	9.0	500	UF	2.58	116	-	-	116
Total		175.5				4 111		1 844	2 267

N'fifikh (downstream area)

Crops		Benefit				Expenditure		Net Benefit (DH) g=d-f	
		Occupancy (%) a	Yield		Unit price (DH/kg) c	Benefit (DH) d=a*b*c	Unit cost (DH/ha) e		Net cost (DH) f=e*a
			Qty. b	Unit (ton/ha)					
Cereals 1	Soft wheat	50.7	1.3	(ton/ha)	1.41	932	2 623	1 330	-398
Cereals 2	Barley	11.7	1.2	(ton/ha)	1.01	142	1 685	197	-55
Fodder1	Barley	3.9	1 775	UF	2.58	179	1 704	66	113
Vegetable	Potato	3.9	15.1	(ton/ha)	1.77	1 044	16 066	627	417
Tree Crop	Grape	7.8	5	(ton/ha)	2.51	979	2 622	205	774
Fodder from cereal 1	-	50.7	659	UF	2.58	862	-	-	862
Fodder from cereal 2	-	11.7	608	UF	2.58	184	-	-	184
Fallow	-	22.0	500	UF	2.58	284	-	-	284
Total		162.4				4 606		2 425	2 181

Taskourt (Perennial Irrigation Area)

Crops		Benefit				Expenditure		Net Benefit (DH) g=d-f	
		Occupancy (%) a	Yield		Unit price (DH/kg) c	Benefit (DH) d=a*b*c	Unit cost (DH/ha) e		Net cost (DH) f=e*a
			Qty. b	Unit (ton/ha)					
Cereals 1	Soft wheat	33	2.6	(ton/ha)	1.50	1 287	1 384	457	830
Cereals 2	Barley	33	1.8	(ton/ha)	1.10	653	1 259	415	238
Fodder	Alfalfa	5	8 615	UF	4.47	1 925	3 362	168	1 757
Legume	Broad bean	2	6.3	(ton/ha)	3.33	419	2 134	43	376
Vegetable 1	Watermelon	8	25	(ton/ha)	3.44	6 880	9 710	777	6 103
Vegetable 2	Potato	4	8.75	(ton/ha)	1.75	614	9 710	388	226
Tree Crop 1	Olive	15	4.8	(ton/ha)	2.25	1 616	2 360	354	1 262
Fodder from cereal 1	-	33	1 000	UF	2.58	851	-	-	851
Fodder from cereal 2	-	33	913	UF	2.58	777	-	-	777
Total		166				15 022		2 602	12 420

Taskourt (Seasonal and Flood Irrigation Area)

Crops		Benefit				Expenditure		Net Benefit (DH) g=d-f	
		Occupancy (%) a	Yield		Unit price (DH/kg) c	Benefit (DH) d=a*b*c	Unit cost (DH/ha) e		Net cost (DH) f=e*a
			Qty. b	Unit (ton/ha)					
Cereals 1	Soft wheat	41	0.27	(ton/ha)	1.50	166	1 384	567	-401
Cereals 2	Barley	45	0.28	(ton/ha)	1.10	139	1 259	567	-428
Tree Crop 1	Olive	5	0.72	(ton/ha)	2.25	81	2 360	118	-37
Tree Crop 2	Almond	5	0.34	(ton/ha)	41.49	705	1 253	63	642
Fodder from cereal 1	-	41	137	UF	2.58	145	-	-	145
Fodder from cereal 2	-	45	142	UF	2.58	165	-	-	165
Fallow	-	4	500	UF	2.58	52	-	-	52
Total		186				1 453		1 315	138

Table XVIII.2.2: Revenu agricole estimé dans les conditions actuelles (sans projet) (2/2)
(Economic Price, DH/ha)

Timkit (Ifegh)

Crops		Benefit				Expenditure		Net Benefit (DH) g=d-f	
		Occupancy (%) a	Yield		Unit price (DH/kg) c	Benefit (DH) d=a*b*c	Unit cost (DH/ha) e		Net cost (DH) f=e*a
			Qty. b	Unit (ton/ha)					
Cereals 1	Hard wheat	33.6	2.8	(ton/ha)	1.88	1 769	2 222	747	1 022
Cereals 2	Barley	38.4	1.7	(ton/ha)	1.33	868	1 259	483	385
Fodder	Alfalfa	11.5	5 892	UF	4.47	3 034	3 846	443	2 591
Vegetable	Potato	2.9	26	(ton/ha)	2.01	1 530	4 728	136	1 394
Tree Crop 1	Dates	7.7	1.4	(ton/ha)	6.88	734	1 977	152	582
Tree Crop 2	Olive	1.9	2.1	(ton/ha)	2.31	93	3 846	74	19
Fodder from cereal 1	-	33.6	1 000	UF	2.58	867	-	-	867
Fodder from cereal 2	-	38.4	858	UF	2.58	850	-	-	850
Total		168.0				9 745		2 035	7 710

Timkit (Tinejdad)

Crops		Benefit				Expenditure		Net Benefit (DH) g=d-f	
		Occupancy (%) a	Yield		Unit price (DH/kg) c	Benefit (DH) d=a*b*c	Unit cost (DH/ha) e		Net cost (DH) f=e*a
			Qty. b	Unit (ton/ha)					
Cereals 1	Hard wheat	50.4	2.8	(ton/ha)	1.88	2 653	2 222	1 120	1 533
Fodder	Alfalfa	12.6	5 846	UF	4.47	3 293	3 846	485	2 808
Vegetable	Potato	4.2	27.6	(ton/ha)	2.01	2 332	4 728	199	2 133
Tree Crop 1	Dates	15.12	1.33	(ton/ha)	6.88	1 384	1 977	299	1 085
Tree Crop 2	Olive	1.68	2.1	(ton/ha)	2.31	82	3 846	65	17
Fodder from cereal 1	-	50.4	1 000	UF	2.58	1 300	-	-	1 300
Total		134.4				11 044		2 168	8 876

Timkit (Chtam)

Crops		Benefit				Expenditure		Net Benefit (DH) g=d-f	
		Occupancy (%) a	Yield		Unit price (DH/kg) c	Benefit (DH) d=a*b*c	Unit cost (DH/ha) e		Net cost (DH) f=e*a
			Qty. b	Unit (ton/ha)					
Cereals 1	Hard wheat	7	2.8	(ton/ha)	1.88	368	2 222	156	212
Fodder	Alfalfa	4.2	5 846	UF	4.47	1 098	3 846	162	936
Vegetable	Potato	2.8	27.6	(ton/ha)	2.01	1 555	4 728	132	1 423
Fodder from cereal 1	-	7	1 000	UF	2.58	181	-	-	181
Total		21				3 202		450	2 752

Azghar

Crops		Benefit				Expenditure		Net Benefit (DH) g=d-f	
		Occupancy (%) a	Yield		Unit price (DH/kg) c	Benefit (DH) d=a*b*c	Unit cost (DH/ha) e		Net cost (DH) f=e*a
			Qty. b	Unit (ton/ha)					
Cereals 1	Hard wheat	28.7	0.47	(ton/ha)	1.67	225	1 883	540	-315
Cereals 2	Barley	32.8	0.68	(ton/ha)	1.12	250	1 684	552	-302
Fodder	Barley	4.1	473	UF	2.58	50	1 742	71	-21
Legume	Broad bean	4.1	0.21	(ton/ha)	3.21	28	1 795	74	-46
Tree Crop	Olive	12.3	0.84	(ton/ha)	2.61	270	1 373	169	101
Fodder from cereal 1	-	28.7	238	UF	2.58	176	-	-	176
Fodder from cereal 2	-	32.8	402	UF	2.58	340	-	-	340
Fallow	-	18.0	500	UF	2.58	232	-	-	232
Total		161.5				1 571		1 406	165

Table XVIII.2.3: Coûté de la dépression de la production végétale dans les conditions actuelles (sans projet) (1/6)
(Financial & Economic Price, DH/ha)

N'fifikh (Upstream Area)

Soft wheat	Unit	Qty.	Unit price (financial)	Cone. factor	Unit price (economic)	Cost
Machineries						
Plowing (machine)	Unit				-	-
Leveling	Unit	1.0	250	0.86	215	215
Crop covering (machine)	Unit	1.0	150	0.86	129	129
Harvest	Unit	1.0	200	0.86	172	172
Baling	Bale	135.0	1.5	0.86	1.3	174
Packing of grain	Unit	13.0	2	0.86	1.7	22
Transportation	100kg	13.0	5	0.86	4.3	56
Agricultural input materials						
Seed	100kg	2.0	350	0.86	301	602
Manure	ton	-	-	-	-	-
Fertilizer (1)	100kg	0.5	250	0.85	213	106
Fertilizer (2)	100kg	0.5	150	0.85	128	64
Fertilizer (3)	100kg	-	-	-	-	-
Chemicals	liter	1.0	75	0.85	64	64
Labor Force						
Cultivation	day	-	-	-	-	-
Fertilization	day	1.0	40	0.86	34	34
Seeding/ seedling	day	1.0	40	0.86	34	34
Treatment/Maintenance	day	2.0	40	0.86	34	69
Harvest	day	-	-	-	-	-
Total						1 741

N'fifikh (Upstream Area)

Hard wheat	Unit	Qty.	Unit price (financial)	Cone. factor	Unit price (economic)	Cost
Machineries						
Plowing (machine)	Unit	-	-	-	-	-
Leveling	Unit	1.0	250	0.86	215	215
Crop covering (machine)	Unit	1.0	150	0.86	129	129
Harvest	Unit	1.0	200	0.86	172	172
Baling	Bale	135.0	1.5	0.86	1.3	174
Packing of grain	Unit	18.0	2.5	0.86	2.2	39
Transportation	100kg	20.0	5.0	0.86	4.3	86
Agricultural input materials						
Seed	100kg	2.0	300	0.86	258	516
Manure	ton	-	-	-	-	-
Fertilizer (1)	100kg	1.0	250	0.85	213	213
Fertilizer (2)	100kg	1.0	150	0.85	128	128
Fertilizer (3)	100kg	-	-	-	-	-
Chemicals	liter	1.0	75	0.85	64	64
Labor Force						
Cultivation	day	-	-	-	-	-
Fertilization	day	1.0	40	0.86	34	34
Seeding/ seedling	day	2.0	40	0.86	34	69
Treatment/Maintenance	day	2.0	40	0.86	34	69
Harvest	day	-	-	-	-	-
Total						1 908

N'fifikh (Upstream Area)

Fodder barley	Unit	Qty.	Unit price (financial)	Cone. factor	Unit price (economic)	Cost
Machineries						
Plowing (machine)	Unit				-	-
Leveling	Unit	1.0	250	0.86	215	215
Crop covering (machine)	Unit	1.0	150	0.86	129	129
Harvest	Unit	1.0	150	0.86	129	129
Baling	Bale	170.0	1.5	0.86	1.3	219
Transportation	Bale	170.0	0.3	0.86	0.3	44
Agricultural input materials						
Seed	100kg	2.5	200	0.86	172	430
Manure	ton	-	-	-	-	-
Fertilizer (1)	100kg	-	-	-	-	-
Fertilizer (2)	100kg	-	-	-	-	-
Fertilizer (3)	100kg	-	-	-	-	-
Chemicals	liter	-	-	-	-	-
Labor Force						
Cultivation	day	-	-	-	-	-
Fertilization	day	-	-	-	-	-
Seeding/ seedling	day	-	-	-	-	-
Treatment/Maintenance	day	3.0	40	0.86	34	103
Harvest	day	-	-	-	-	-
Total						1 269

N'fifikh (Upstream Area)

Broad Bean	Unit	Qty.	Unit price (financial)	Cone. factor	Unit price (economic)	Cost
Machineries						
Plowing (machine)	Unit	1.0	250	0.86	215	215
Leveling	Unit	-	-	-	-	-
Crop covering (machine)	Unit	1.0	150	0.86	129	129
Harvest	Unit	-	-	-	-	-
Baling	Bale	-	-	-	-	-
Packing of grain	Unit	-	-	-	-	-
Transportation	ton	-	-	-	-	-
Agricultural input materials						
Seed	kg	100.0	10	0.86	9	860
Manure	ton	-	-	-	-	-
Fertilizer (1) 14-28-14	100kg	0.5	250	0.85	213	106
Fertilizer (2)	100kg	-	-	-	-	-
Fertilizer (3)	100kg	-	-	-	-	-
Chemicals	liter	-	-	-	-	-
Labor Force						
Cultivation	day	4.0	40	0.86	34	138
Fertilization	day	2.0	40	0.86	34	69
Seeding/ seedling	day	2.0	40	0.86	34	69
Treatment/Maintenance	day	4.0	40	0.86	34	138
Harvest	day	5.0	40	0.86	34	172
Transportation	day	5.0	40	0.86	34	172
Total						2 068

N'fifikh (Upstream Area)

Potato	Unit	Qty.	Unit price (financial)	Cone. factor	Unit price (economic)	Cost
Machineries						
Plowing (machine)	Unit	1.0	300	0.86	258	258
Leveling	Unit	1.0	150	0.86	129	129
Crop covering (machine)	Unit	1.0	150	0.86	129	129
Harvest	Unit	-	-	-	-	-
Baling	Bale	-	-	-	-	-
Packing of grain	Unit	-	-	-	-	-
Transportation	ton	25.0	12	0.86	10	258
Pump irrigation	m3	2 400	0.5	0.86	0.4	1 032
Agricultural input materials						
Seed	100kg	2.2	4 000	0.86	3 440	7 568
Manure	ton	-	-	-	-	-
Fertilizer (1)	100kg	1.0	250	0.85	213	213
Fertilizer (2)	100kg	2.0	100	0.85	85	170
Fertilizer (3)	100kg	-	-	-	-	-
Chemicals	liter	3.0	200	0.85	170	510
Labor Force						
Cultivation	day	-	-	-	-	-
Fertilization	day	7.0	40	0.86	34	241
Seeding/ seedling	day	3.0	40	0.86	34	103
Treatment/Maintenance	day	16.0	40	0.86	34	550
Harvest	day	8.0	40	0.86	34	275
Total						11 436

N'fifikh (Upstream Area)

Grape	Unit	Qty.	Unit price (financial)	Cone. factor	Unit price (economic)	Cost
Machineries						
Plowing (machine)	Unit	2.0	150	0.86	129	258
Leveling	Unit	-	-	-	-	-
Crop covering (machine)	Unit	-	-	-	-	-
Transport	ton	10.0	10.0	0.86	8.6	86
Irrigation	m3	-	-	-	-	-
Supporter	Unit	10.0	50	0.86	43	430
Treatment	Unit	0.5	500	0.86	430	215
Agricultural input materials						
Seed	100kg	-	-	-	-	-
Manure	ton	-	-	-	-	-
Fertilizer (1)	100kg	3.0	240	0.85	204	612
Fertilizer (2)	100kg	-	-	-	-	-
Fertilizer (3)	100kg	-	-	-	-	-
Chemicals	Unit	0.5	500	0.85	425	213
Fuel	liter	-	-	-	-	-
Labor Force						
Cultivation	day	-	-	-	-	-
Fertilization	day	3.0	40	0.86	34	103
Seeding/ seedling	day	-	-	-	-	-
Treatment/Maintenance	day	8.0	40	0.86	34	275
Harvest	day	12.5	40	0.86	34	430
Total						2 622

Table XVIII.2.2.3: Coût de la dépression de la production végétale dans les conditions actuelles (sans projet) (2/6)
(Financial & Economic Price, DH/ha)

N'fifikh (Downstream Area)

Soft wheat	Unit	Qty.	Unit price (financial)	Cone. factor	Unit price (economic)	Cost
Machineries						
Plowing (machine)	Unit	1.0	250	0.86	215	215
Leveling	Unit	-	-	-	-	-
Crop covering (machine)	Unit	2.0	150	0.86	129	258
Harvest	Unit	1.0	400	0.86	344	344
Baling	Unit	-	-	-	-	-
Agricultural input materials						
Seed	100kg	2.0	400	0.86	344	688
Manure	ton	-	-	-	-	-
Fertilizer (1)	100kg	2.0	255	0.85	217	434
Fertilizer (2)	100kg	1.0	240	0.85	204	204
Fertilizer (3)	100kg	-	-	-	-	-
Chemicals	liter	-	-	-	-	-
Labor Force						
Cultivation	day	-	-	-	-	-
Fertilization	day	1.0	40	0.86	34	34
Seeding/ seedling	day	1.0	40	0.86	34	34
Treatment/Maintenance	day	6.0	40	0.86	34	206
Harvest	day	6.0	40	0.86	34	206
Total						2 623

N'fifikh (Downstream Area)

Barley	Unit	Qty.	Unit price (financial)	Cone. factor	Unit price (economic)	Cost
Machineries						
Plowing (machine)	Unit	1.0	250	0.86	215	215
Leveling	Unit	-	-	-	-	-
Crop covering (machine)	Unit	1.0	150	0.86	129	129
Harvest	Unit	1.0	400	0.86	344	344
Baling	Unit	-	-	-	-	-
Agricultural input materials						
Seed	100kg	1.5	300	0.86	258	387
Manure	ton	-	-	-	-	-
Fertilizer (1)	100kg	1.5	250	0.85	213	319
Fertilizer (2)	100kg	0.5	200	0.85	170	85
Fertilizer (3)	100kg	-	-	-	-	-
Chemicals	liter	-	-	-	-	-
Labor Force						
Cultivation	day	-	-	-	-	-
Fertilization	day	1.0	40	0.86	34	34
Seeding/ seedling	day	1.0	40	0.86	34	34
Treatment/Maintenance	day	-	-	-	-	-
Harvest	day	4.0	40	0.86	34	138
Total						1 685

N'fifikh (Downstream Area)

Fodder barley	Unit	Qty.	Unit price (financial)	Cone. factor	Unit price (economic)	Cost
Machineries						
Plowing (machine)	Unit	1.0	250	0.86	215	215
Leveling	Unit	-	-	-	-	-
Crop covering (machine)	Unit	1.0	150	0.86	129	129
Ridging	Unit	-	-	-	-	-
Baling	Unit	1.0	150	0.86	129	129
Other	Unit	1.0	200	0.86	172	172
Agricultural input materials						
Seed	100kg	1.5	480	0.86	413	619
Manure	ton	-	-	-	-	-
Fertilizer (1)	100kg	1.0	255	0.85	217	217
Fertilizer (2)	100kg	-	-	-	-	-
Fertilizer (3)	100kg	-	-	-	-	-
Chemicals	liter	-	-	-	-	-
Chemicals	kg	-	-	-	-	-
Fuel	liter	-	-	-	-	-
Labor Force						
Cultivation	day	-	-	-	-	-
Fertilization	day	0.5	40	0.86	34	17
Seeding/ seedling	day	1.0	40	0.86	34	34
Treatment/Maintenance	day	-	-	-	-	-
Harvest	day	5.0	40	0.86	34	172
Total						1 704

N'fifikh (Downstream Area)

Potato	Unit	Qty.	Unit price (financial)	Cone. factor	Unit price (economic)	Cost
Machineries						
Plowing (machine)	Unit	1.0	250	0.86	215	215
Leveling	Unit	-	-	-	-	-
Crop covering (machine)	Unit	-	-	-	-	-
Ridging	Unit	1.0	150	0.86	129	129
Harvest	Unit	-	-	-	-	-
Baling	Unit	-	-	-	-	-
Agricultural input materials						
Seed	100kg	2.0	4 000	0.86	3 440	6 880
Fertilizer (1)	100kg	11.5	283	0.85	241	2 766
Fertilizer (2)	100kg	3.5	185	0.85	157	550
Fertilizer (3)	100kg	-	-	-	-	-
Chemicals	liter	3.0	300	0.85	255	765
Chemicals	kg	7.0	200	0.85	170	1 190
Fuel	liter	128.0	5.0	0.85	4.3	544
Labor Force						
Cultivation	day	-	-	-	-	-
Fertilization	day	5.0	40	0.86	34	172
Seeding/ seedling	day	15.0	40	0.86	34	516
Treatment/Maintenance	day	45.0	40	0.86	34	1 548
Harvest	day	23.0	40	0.86	34	791
Total						16 066

N'fifikh (Upstream Area)

Grape	Unit	Qty.	Unit price (financial)	Cone. factor	Unit price (economic)	Cost
Machineries						
Plowing (machine)	Unit	2.0	150	0.86	129	258
Leveling	Unit	-	-	-	-	-
Crop covering (machine)	Unit	-	-	-	-	-
Transport	ton	10.0	10.0	0.86	8.6	86
Irrigation	m3	-	-	-	-	-
Supporter	Unit	10.0	50	0.86	43	430
Treatment	Unit	0.5	500	0.86	430	215
Agricultural input materials						
Seed	100kg	-	-	-	-	-
Manure	ton	-	-	-	-	-
Fertilizer (1)	100kg	3.0	240	0.85	204	612
Fertilizer (2)	100kg	-	-	-	-	-
Fertilizer (3)	100kg	-	-	-	-	-
Chemicals	Unit	0.5	500	0.85	425	213
Fuel	liter	-	-	-	-	-
Labor Force						
Cultivation	day	-	-	-	-	-
Fertilization	day	3.0	40	0.86	34	103
Seeding/ seedling	day	-	-	-	-	-
Treatment/Maintenance	day	8.0	40	0.86	34	275
Harvest	day	12.5	40	0.86	34	430
Total						2 622

Table XVIII.2.3: Coûté de la dépression de la production végétale dans les conditions actuelles (sans projet) (3/6)
(Financial & Economic Price, DH/ha)

Taskourt (Perennial, Seasonal, and Flood Irrigation Areas)

Soft wheat	Unit	Qty.	Unit price (financial)	Cone. factor	Unit price (economic)	Cost
Machineries						
Plowing (machine)	day	0.7	110	0.86	95	63
Plowing (animal)	day	-	-	-	-	-
Leveling	day	-	-	-	-	-
Crop covering (machine)	day	1.0	90	0.86	77	77
Crop covering (animal)	day	-	-	-	-	-
Harvest	day	0.3	100	0.86	86	28
Baling	day	-	-	-	-	-
Agricultural input materials						
Seed	100kg	1.0	330	0.86	284	284
Manure	ton	-	-	-	-	-
Fertilizer (14-28-14)	100kg	0.3	230	0.85	196	66
Fertilizer (Urea)	100kg	0.3	230	0.85	196	53
Fertilizer (3)	100kg	-	-	-	-	-
Chemicals (24D)	liter	-	-	-	-	-
Labor Force						
Cultivation	day	1.7	40	0.86	34	57
Fertilization	day	1.0	40	0.86	34	34
Seeding/ seedling	day	-	-	-	-	-
Treatment/Maintenance	day	5.0	40	0.86	34	172
Harvest	day	16.0	40	0.86	34	550
Total						1 384

Taskourt (Perennial, Seasonal, and Flood Irrigation Areas)

Barley	Unit	Qty.	Unit price (financial)	Cone. factor	Unit price (economic)	Cost
Machineries						
Plowing (machine)	day	0.4	100	0.86	86	30
Plowing (animal)	day	0.3	70	0.86	60	15
Leveling	day	-	-	-	-	-
Crop covering (machine)	day	0.8	100	0.86	86	65
Crop covering (animal)	day	-	-	-	-	-
Threshing	day	0.2	50	0.86	43	7
Baling	day	-	-	-	-	-
Agricultural input materials						
Seed	Unit	1.0	220	0.86	189	189
Manure	ton	-	-	-	-	-
Fertilizer (14-28-14)	100kg	0.3	230	0.85	196	59
Fertilizer (Urea)	100kg	0.1	230	0.85	196	10
Fertilizer (3)	100kg	-	-	-	-	-
Chemicals (24D)	liter	0.0	35	0.85	30	1
Labor Force						
Cultivation	day	2.2	40	0.86	34	76
Fertilization	day	1.8	40	0.86	34	62
Seeding/ seedling	day	0.5	40	0.86	34	17
Treatment/Maintenance	day	6.7	40	0.86	34	229
Harvest	day	14.5	40	0.86	34	499
Total						1 259

Taskourt (Perennial Irrigation Area)

Alfalfa	Unit	Qty.	Unit price (financial)	Cone. factor	Unit price (economic)	Cost
Machineries						
Plowing (machine)	day	-	-	-	-	-
Plowing (animal)	day	0.2	70	0.86	60	12
Leveling	day	0.2	60	0.86	52	10
Crop covering (machine)	day	0.2	50	0.86	43	9
Crop covering (animal)	day	-	-	-	-	-
Ridging	day	-	-	-	-	-
Harvest (Transport)	day	1.0	300	0.86	258	258
Agricultural input materials						
Seed	100kg	0.1	3 000	0.86	2 580	129
Manure	ton	-	-	-	-	-
Fertilizer (14-28-14)	100kg	-	-	-	-	-
Fertilizer (Urea)	100kg	4.5	230	0.85	196	880
Fertilizer (3)	100kg	-	-	-	-	-
Chemicals (24D)	liter	-	-	-	-	-
Labor Force						
Cultivation	day	3.0	40	0.86	34	103
Fertilization	day	15.0	40	0.86	34	516
Seeding/ seedling	day	-	-	-	-	-
Treatment/Maintenance	day	12.0	40	0.86	34	413
Harvest	day	30.0	40	0.86	34	1 032
Total						3 362

Taskourt (Perennial Irrigation Area)

Broad bean	Unit	Qty.	Unit price (financial)	Cone. factor	Unit price (economic)	Cost
Machineries						
Plowing (machine)	day	0.4	110	0.86	95	38
Plowing (animal)	day	0.8	70	0.86	60	48
Leveling	day	-	-	-	-	-
Crop covering (machine)	day	0.1	90	0.86	77	8
Crop covering (animal)	day	0.9	70	0.86	60	54
Ridging	day	-	-	-	-	-
Baling	day	-	-	-	-	-
Agricultural input materials						
Seed	100kg	0.8	500	0.86	430	344
Manure	ton	-	-	-	-	-
Fertilizer (14-28-14)	100kg	1.0	230	0.85	196	196
Fertilizer (Urea)	100kg	-	-	-	-	-
Fertilizer (3)	100kg	-	-	-	-	-
Chemicals (24D)	liter	-	-	-	-	-
Labor Force						
Cultivation	day	9.0	40	0.86	34	310
Fertilization	day	7.0	40	0.86	34	241
Seeding/ seedling	day	4.0	40	0.86	34	138
Treatment/Maintenance	day	4.0	40	0.86	34	138
Harvest	day	18.0	40	0.86	34	619
Total						2 134

Taskourt (Perennial Irrigation Area)

Watermelon	Unit	Qty.	Unit price (financial)	Cone. factor	Unit price (economic)	Cost
Machineries						
Plowing (machine)	day	-	-	-	-	-
Plowing (animal)	day	1.0	70	0.86	60	60
Leveling	day	-	-	-	-	-
Crop covering (machine)	day	-	-	-	-	-
Crop covering (animal)	day	1.0	60	0.86	52	52
Ridging	day	0.5	50	0.86	43	22
Baling	day	-	-	-	-	-
Agricultural input materials						
Seed	kg	7.5	350	0.86	301	2 258
Manure	ton	-	-	-	-	-
Fertilizer (14-28-14)	100kg	-	-	-	-	-
Fertilizer (Urea)	100kg	3.4	230	0.85	196	665
Fertilizer (3)	100kg	-	-	-	-	-
Chemicals (24D)	liter	-	-	-	-	-
Labor Force						
Cultivation	day	13.0	40	0.86	34	447
Fertilization	day	30.4	40	0.86	34	1 046
Seeding/ seedling	day	70.0	40	0.86	34	2 408
Treatment/Maintenance	day	40.0	40	0.86	34	1 376
Harvest	day	40.0	40	0.86	34	1 376
Total						9 710

Taskourt (Perennial Irrigation Area)

Potato	Unit	Qty.	Unit price (financial)	Cone. factor	Unit price (economic)	Cost
Machineries						
Plowing (machine)	day	-	-	-	-	-
Plowing (animal)	day	1.0	70	0.86	60	60
Leveling	day	-	-	-	-	-
Crop covering (machine)	day	-	-	-	-	-
Crop covering (animal)	day	1.0	60	0.86	52	52
Ridging	day	0.5	50	0.86	43	22
Baling	day	-	-	-	-	-
Agricultural input materials						
Seed	100kg	7.5	350	0.86	301	2 258
Manure	ton	-	-	-	-	-
Fertilizer (14-28-14)	100kg	-	-	-	-	-
Fertilizer (Urea)	100kg	3.4	230	0.85	196	665
Fertilizer (3)	100kg	-	-	-	-	-
Chemicals (24D)	liter	-	-	-	-	-
Labor Force						
Cultivation	day	13.0	40	0.86	34	447
Fertilization	day	30.4	40	0.86	34	1 046
Seeding/ seedling	day	70.0	40	0.86	34	2 408
Treatment/Maintenance	day	40.0	40	0.86	34	1 376
Harvest	day	40.0	40	0.86	34	1 376
Total						9 710

Table XVIII.2.2.3: Coûté de la dépression de la production végétale dans les conditions actuelles (sans projet) (4/6)
(Financial & Economic Price, DH/ha)

Taskourt (Perennial, Seasonal, and Flood Irrigation Areas)

Olive	Unit	Qty.	Unit price (financial)	Cone. factor	Unit price (economic)	Cost
Machineries						
Plowing (machine)	day	-	-	-	-	-
Plowing (animal)	day	-	-	-	-	-
Leveling	day	-	-	-	-	-
Crop covering (machine)	day	-	-	-	-	-
Crop covering (animal)	day	-	-	-	-	-
Ridging	day	-	-	-	-	-
Harvest (Transport)	day	-	-	-	-	-
Agricultural input materials						
Seed	100kg	-	-	-	-	-
Manure	ton	-	-	-	-	-
Fertilizer (14-28-14)	100kg	-	-	-	-	-
Fertilizer (Urea)	100kg	0.3	230	0.85	196	59
Fertilizer (3)	100kg	-	-	-	-	-
Chemicals (24D)	Unit	0.1	120	0.85	102	10
Labor Force						
Cultivation	day	-	-	-	-	-
Fertilization	day	23.4	40	0.86	34	805
Seeding/ seedling	day	-	-	-	-	-
Treatment/Maintenance	day	19.2	40	0.86	34	660
Harvest	day	24.0	40	0.86	34	826
Total						2 360

Taskourt (Seasonal and Flood Irrigation Areas)

Almond	Unit	Qty.	Unit price (financial)	Cone. factor	Unit price (economic)	Cost
Machineries						
Plowing (machine)	day	-	-	-	-	-
Plowing (animal)	day	-	-	-	-	-
Leveling	day	-	-	-	-	-
Crop covering (machine)	day	-	-	-	-	-
Crop covering (animal)	day	-	-	-	-	-
Ridging	day	-	-	-	-	-
Harvest (Transport)	day	-	-	-	-	-
Agricultural input materials						
Seed	100kg	-	-	-	-	-
Manure	ton	-	-	-	-	-
Fertilizer (NH4)2SO4)	100kg	2.0	150	0.85	128	255
Fertilizer (Urea)	100kg	-	-	-	-	-
Fertilizer (3)	100kg	-	-	-	-	-
Maintenance	Unit	2.0	150	0.86	129	258
Labor Force						
Cultivation	day	-	-	-	-	-
Fertilization	day	2.0	40	0.86	34	69
Seeding/ seedling	day	-	-	-	-	-
Treatment/Maintenance	day	7.0	40	0.86	34	241
Harvest	day	12.5	40	0.86	34	430
Total						1 253

Timkit (Ifegh, Tinejdad, and Chtam)

Hard wheat	Unit	Qty.	Unit price (financial)	Cone. factor	Unit price (economic)	Cost
Machineries						
Plowing	hour	2.0	56	0.86	48	96
Leveling	hour	-	-	-	-	-
Crop covering	hour	1.0	56	0.86	48	48
Harvest	hour	4.0	96	0.86	83	330
Baling	hour	-	-	-	-	-
Agricultural input materials						
Seed	100kg	1.2	385	0.86	331	397
Manure	ton	-	-	-	-	-
Fertilizer (14-28-14)	100kg	0.8	212	0.85	180	135
Fertilizer (Urea)	100kg	0.5	190	0.85	162	81
Fertilizer (3)	100kg	-	-	-	-	-
Chemicals	liter	-	-	-	-	-
Labor Force						
Cultivation	day	3.0	40	0.86	34	103
Fertilization	day	1.0	40	0.86	34	34
Seeding/ seedling	day	2.0	40	0.86	34	69
Treatment/Maintenance	day	27.0	40	0.86	34	929
Harvest	day	-	-	-	-	-
Total						2 222

Timkit (Ifegh)

Barley	Unit	Qty.	Unit price (financial)	Cone. factor	Unit price (economic)	Cost
Machineries						
Plowing	hour	2.0	56	0.86	48	96
Leveling	hour	-	-	-	-	-
Crop covering	hour	-	-	-	-	-
Harvest	hour	3.5	96	0.86	83	289
Baling	hour	-	-	-	-	-
Agricultural input materials						
Seed	100kg	1.2	180	0.86	155	186
Manure	ton	-	-	-	-	-
Fertilizer (14-28-14)	100kg	-	-	-	-	-
Fertilizer (Urea)	100kg	-	-	-	-	-
Fertilizer (3)	100kg	-	-	-	-	-
Chemicals	liter	-	-	-	-	-
Labor Force						
Cultivation	day	-	-	-	-	-
Fertilization	day	-	-	-	-	-
Seeding/ seedling	day	2.0	40	0.86	34	69
Treatment/Maintenance	day	-	-	-	-	-
Harvest	day	18.0	40	0.86	34	619
Total						1 259

Timkit (Ifegh, Tinejdad, and Chtam)

Alfalfa	Unit	Qty.	Unit price (financial)	Cone. factor	Unit price (economic)	Cost
Cultivation by machineries & animal						
Plowing	hour	3.0	56	0.86	48	144
Leveling	hour	-	-	-	-	-
Crop covering	hour	-	-	-	-	-
Harvest	hour	-	-	-	-	-
Baling	hour	-	-	-	-	-
Agricultural input materials						
Seed	Unit	0.2	3 000	0.86	2 580	516
Manure	ton	-	-	-	-	-
Fertilizer (14-28-14)	100kg	0.5	212	0.85	180	90
Fertilizer (2)	100kg	-	-	-	-	-
Fertilizer (3)	100kg	-	-	-	-	-
Chemicals	liter	-	-	-	-	-
Labor Force						
Cultivation	day	10.0	40	0.86	34	344
Fertilization	day	10.0	40	0.86	34	344
Seeding/ seedling	day	5.0	40	0.86	34	172
Treatment/Maintenance	day	-	-	-	-	-
Harvest	day	65.0	40	0.86	34	2 236
Total						3 846

Timkit (Ifegh, Tinejdad, and Chtam)

Potato	Unit	Qty.	Unit price (financial)	Cone. factor	Unit price (economic)	Cost
Cultivation by machineries & animal						
Plowing	hour	3.0	56	0.86	48	144
Leveling	hour	-	-	-	-	-
Crop covering	hour	-	-	-	-	-
Harvest	hour	-	-	-	-	-
Baling	hour	-	-	-	-	-
Agricultural input materials						
Seed	Unit	1.0	1 500	0.86	1 290	1 290
Manure	ton	-	-	-	-	-
Fertilizer (14-28-14)	100kg	3.0	212	0.85	180	541
Fertilizer (2)	100kg	-	-	-	-	-
Fertilizer (3)	100kg	-	-	-	-	-
Chemicals	liter	-	-	-	-	-
Labor Force						
Cultivation	day	9.0	40	0.86	34	310
Fertilization	day	5.0	40	0.86	34	172
Seeding/ seedling	day	2.0	40	0.86	34	69
Treatment/Maintenance	day	19.0	40	0.86	34	654
Harvest	day	45.0	40	0.86	34	1 548
Total						4 728

Table XVIII.2.3: Coûté de la dépression de la production végétale dans les conditions actuelles (sans projet) (5/6)
(Financial & Economic Price, DH/ha)

Timkit (Ifegh and Tinejda)

Dates (1st year)	Unit	Qty.	Unit price (financial)	Cone. factor	Unit price (economic)	Cost
Cultivation by machineries & animal						
Plowing	hour	8.0	56	0.86	48	385
Leveling	hour	-	-	-	-	-
Agricultural input materials						
Seed	Unit	100.0	100	0.86	86	8 600
Manure	ton	-	-	-	-	-
Fertilizer (14-28-14)	100kg	7.0	212	0.85	180	1 261
Labor Force						
Cultivation	day	30.0	40	0.86	34	1 032
Fertilization	day	90.0	40	0.86	34	3 096
Seeding/ seedling	day	-	-	-	-	-
Treatment/Maintenance	day	-	-	-	-	-
Harvest	day	-	-	-	-	-
Total						14 374
Dates (2nd to 7th years)	Unit	Qty.	Unit price (financial)	Cone. factor	Unit price (economic)	Cost
Cultivation by machineries & animal						
Agricultural input materials						
Fertilizer (14-28-14)	100kg	1.0	212	0.85	180	180
Labor Force						
Cultivation	day	-	-	-	-	-
Fertilization	day	4.0	40	0.86	34	138
Seeding/ seedling	day	-	-	-	-	-
Treatment/Maintenance	day	12.0	40	0.86	34	413
Harvest	day	-	-	-	-	-
Total						731
Dates (from 3rd year)	Unit	Qty.	Unit price (financial)	Cone. factor	Unit price (economic)	Cost
Cultivation by machineries & animal						
Agricultural input materials						
Manure	ton	-	-	-	-	-
Fertilizer (14-28-14)	100kg	2.0	212	0.85	180	360
Labor Force						
Cultivation	day	-	-	-	-	-
Fertilization	day	4.0	40	0.86	34	138
Seeding/ seedling	day	-	-	-	-	-
Treatment/Maintenance	day	12.0	40	0.86	34	413
Harvest	day	31.0	40	0.86	34	1 066
Total						1 977

Timkit (Ifegh and Tinejda)

Olive (1st year)	Unit	Qty.	Unit price (financial)	Cone. factor	Unit price (economic)	Cost
Cultivation by machineries & animal						
Plowing	hour	6.0	56	0.86	48	289
Leveling	hour	-	-	0.86	-	-
Agricultural input materials						
Seed	Unit	200.0	19	0.86	16	3 268
Manure	ton	-	-	-	-	-
Fertilizer (14-28-14)	100kg	2.0	212	0.85	180	360
Labor Force						
Cultivation	day	20.0	40	0.86	34	688
Fertilization	day	10.0	40	0.86	34	344
Seeding/ seedling	day	-	-	-	-	-
Treatment/Maintenance	day	8.0	40	0.86	34	275
Harvest	day	-	-	-	-	-
Total						5 224
Olive (2nd year)	Unit	Qty.	Unit price (financial)	Cone. factor	Unit price (economic)	Cost
Cultivation by machineries & animal						
Agricultural input materials						
Fertilizer (14-28-14)	100kg	2.0	212	0.85	180	360
Labor Force						
Cultivation	day	-	-	-	-	-
Fertilization	day	10.0	40	0.86	34	344
Seeding/ seedling	day	-	-	-	-	-
Treatment/Maintenance	day	2.0	40	0.86	34	69
Harvest	day	-	-	-	-	-
Total						773
Olive (from 3rd year)	Unit	Qty.	Unit price (financial)	Cone. factor	Unit price (economic)	Cost
Cultivation by machineries & animal						
Plowing	hour	3.0	56	0.86	48	144
Leveling	hour	-	-	-	-	-
Agricultural input materials						
Seed	Unit	0.2	3 000	0.86	2 580	516
Manure	ton	-	-	-	-	-
Fertilizer (14-28-14)	100kg	0.5	212	0.85	180	90
Labor Force						
Cultivation	day	10.0	40	0.86	34	344
Fertilization	day	10.0	40	0.86	34	344
Seeding/ seedling	day	5.0	40	0.86	34	172
Treatment/Maintenance	day	-	-	-	-	-
Harvest	day	65.0	40	0.86	34	2 236
Total						3 846

Azghar

Hard wheat	Unit	Qty.	Unit price (financial)	Cone. factor	Unit price (economic)	Cost
Machineries						
Plowing (machine)	ha	0.9	300	0.86	258	232
Plowing (animal)	ha	0.1	70	0.86	60	6
Leveling	ha	-	-	-	-	-
Crop covering (machine)	ha	0.9	150	0.86	129	116
Crop covering (animal)	ha	0.1	70	0.86	60	6
Harvest (machine)	day	0.9	350	0.86	301	271
Harvest (animal)	day	0.1	70	0.86	60	6
Baling	Bale	120.0	3.0	0.86	2.6	310
Transportation	100kg	120.0	0.5	0.86	0.4	52
Agricultural input materials						
Seed	100kg	1.3	390	0.86	335	436
Manure	ton	-	-	-	-	-
Fertilizer (14-28-14)	100kg	1.0	250	0.85	213	213
Fertilizer (Urea)	100kg	0.5	153	0.85	130	65
Fertilizer (3)	100kg	-	-	-	-	-
Chemicals (2-4-D)	liter	1.0	40	0.85	34	34
Labor Force						
Cultivation	day	-	-	-	-	-
Fertilization	day	1.0	40	0.86	34	34
Seeding/ seedling	day	1.0	40	0.86	34	34
Treatment/Maintenance	day	1.0	40	0.86	34	34
Harvest	day	1.0	40	0.86	34	34
Total						1 883

Azghar

Barley	Unit	Qty.	Unit price (financial)	Cone. factor	Unit price (economic)	Cost
Machineries						
Plowing (machine)	ha	0.9	300	0.86	258	232
Plowing (animal)	ha	0.1	70	0.86	60	6
Leveling	ha	-	-	-	-	-
Crop covering (machine)	ha	0.9	150	0.86	129	116
Crop covering (animal)	ha	0.1	70	0.86	60	6
Harvest (machine)	day	0.9	350	0.86	301	271
Harvest (animal)	day	0.1	70	0.86	60	6
Baling	Bale	120.0	3	0.86	3	310
Transportation	100kg	120.0	0.5	0.86	0.4	52
Agricultural input materials						
Seed	100kg	1.0	275	0.86	237	237
Manure	ton	-	-	-	-	-
Fertilizer (14-28-14)	100kg	1.0	250	0.85	213	213
Fertilizer (Urea)	100kg	0.5	153	0.85	130	65
Fertilizer (3)	100kg	-	-	-	-	-
Chemicals (2-4-D)	liter	1.0	40	0.85	34	34
Labor Force						
Cultivation	day	-	-	-	-	-
Fertilization	day	1.0	40	0.86	34	34
Seeding/ seedling	day	1.0	40	0.86	34	34
Treatment/Maintenance	day	1.0	40	0.86	34	34
Harvest	day	1.0	40	0.86	34	34
Total						1 684

Table XVIII.2.2.3: Coût de la dépression de la production végétale dans les conditions actuelles (sans projet) (6/6)
(Financial & Economic Price, DH/ha)

Azghar

Fodder barley	Unit	Qty.	Unit price (financial)	Cone. factor	Unit price (economic)	Cost
Machineries						
Plowing (machine)	day	1.0	300	0.86	258	258
Plowing (animal)	day	-	-	-	-	-
Leveling	day	-	-	-	-	-
Crop covering (machine)	day	1.0	150	0.86	129	129
Crop covering (animal)	day	-	-	-	-	-
Harvest	day	1.0	200	0.86	172	172
Baling	Bale	100.0	4	0.86	3	344
Transportation	100kg	10.0	5	0.86	4	43
Agricultural input materials						
Seed	100kg	1.5	275	0.86	237	355
Manure	ton	-	-	-	-	-
Fertilizer (TSP)	100kg	1.0	250	1.01	253	253
Fertilizer ((NH4)2SO4)	100kg	0.5	200	0.85	170	85
Fertilizer (3)	100kg	-	-	-	-	-
Chemicals (2-4-D)	liter	-	-	-	-	-
Labor Force						
Cultivation	day	-	-	-	-	-
Fertilization	day	1.0	40	0.86	34	34
Seeding/ seedling	day	2.0	40	0.86	34	69
Treatment/Maintenance	day	-	-	-	-	-
Harvest	day	-	-	-	-	-
Total						1 742

Azghar

Broad bean	Unit	Qty.	Unit price (financial)	Cone. factor	Unit price (economic)	Cost
Machineries						
Plowing (machine)	day	1.0	250	0.86	215	215
Plowing (animal)	day	-	-	-	-	-
Leveling	day	-	-	-	-	-
Crop covering (machine)	day	-	-	-	-	-
Crop covering (animal)	day	-	-	-	-	-
Harvest	day	-	-	-	-	-
Baling	Bale	-	-	-	-	-
Transportation	100kg	-	-	-	-	-
Agricultural input materials						
Seed	100kg	1.3	1 000	0.86	860	1 118
Manure	ton	-	-	-	-	-
Fertilizer (TSP)	100kg	1.0	220	1.01	222	222
Fertilizer ((NH4)2SO4)	100kg	-	-	-	-	-
Fertilizer (3)	100kg	-	-	-	-	-
Chemicals (2-4-D)	liter	-	-	-	-	-
Labor Force						
Cultivation	day	2.0	40	0.86	34	69
Fertilization	day	1.0	40	0.86	34	34
Seeding/ seedling	day	1.0	40	0.86	34	34
Treatment/Maintenance	day	-	-	-	-	-
Harvest	day	3.0	40	0.86	34	103
Total						1 795

Azghar

Olive	Unit	Qty.	Unit price (financial)	Cone. factor	Unit price (economic)	Cost
Machineries						
Plowing (machine)	day	-	-	-	-	-
Plowing (animal)	day	-	-	-	-	-
Leveling	day	-	-	-	-	-
Crop covering (machine)	day	-	-	-	-	-
Crop covering (animal)	day	-	-	-	-	-
Harvest	day	-	-	-	-	-
Baling	Bale	-	-	-	-	-
Transportation	100kg	9.0	5	0.86	4	39
Agricultural input materials						
Seed	100kg	-	-	-	-	-
Manure	ton	-	-	-	-	-
Fertilizer (14-28-14)	100kg	3.0	250	0.85	213	638
Fertilizer ((NH4)2SO4)	100kg	1.0	170	0.85	145	145
Fertilizer (3)	100kg	-	-	-	-	-
Chemicals (2-4-D)	liter	-	-	-	-	-
Labor Force						
Cultivation	day	-	-	-	-	-
Fertilization	day	2.0	40	0.86	34	69
Seeding/ seedling	day	-	-	-	-	-
Treatment/Maintenance	day	2.0	40	0.86	34	69
Harvest	day	12.0	40	0.86	34	413
Total						1 373

Table XVIII.2.4: Revenu net après installation des équipements d'irrigation (1/6)
(Financial and Economic Prices, Per Hectare)

N'fifikh (Upstream and Downstream)		(Per Hectare)					
Soft wheat	Unit	Q'ty	Unit Price (financial)	Conv. factor	Unit Price (economic)	Amount (DH)	
1. Gross Income							
1) Grain	kg	4 000	2.54	0.56	1.41	5 656	
2) Strow	UF	1 000	3.00	0.86	2.58	2 580	
Sub-total						8 236	
2. Production Cost							
1) Seed	kg	120	4.00	0.70	2.81	337	
2) Manure	ton						
3) Fertilizer							
- Urea	kg	261	2.72	0.85	2.31	603	
- TSP	kg	187	2.20	1.01	2.22	416	
- K2SO4	kg	180	2.28	0.71	1.62	291	
4) Agriculture Chemicals	ha	1	50.00	0.85	42.50	43	
5) Mechanization							
- Tractor	unit	1	239.00	0.86	205.54	206	
- Animal Traction	day	5.0	40.00	0.86	34.40	172	
- Baler	unit	1.0	159.00	0.86	136.74	137	
6) Labor Force	day	23	40.00	0.86	34.40	791	
7) Other	%	10				300	
Sub-total						3 296	
3. Net Income (1.- 2.)						4 940	

N'fifikh (Upstream)		(Per Hectare)					
Hard wheat	Unit	Q'ty	Unit Price (financial)	Conv. factor	Unit Price (economic)	Amount (DH)	
1. Gross Income							
1) Grain	kg	4 000	2.54	0.62	1.56	6 256	
2) Strow	UF	1 000	3.00	0.86	2.58	2 580	
Sub-total						8 836	
2. Production Cost							
1) Seed	kg	120	4.00	0.88	3.52	423	
2) Manure	ton						
3) Fertilizer							
- Urea	kg	261	2.72	0.85	2.31	603	
- TSP	kg	187	2.20	1.01	2.22	416	
- K2SO4	kg	180	2.28	0.71	1.62	291	
4) Agriculture Chemicals	ha	1	50.00	0.85	42.50	43	
5) Mechanization							
- Tractor	hr	1	239.00	0.86	205.54	206	
- Animal Traction	day	5.0	40.00	0.86	34.40	172	
- Baler	hr	1.0	159.00	0.86	136.74	137	
6) Labor Force	day	23	40.00	0.86	34.40	791	
7) Other	%	10				308	
Sub-total						3 390	
3. Net Income (1.- 2.)						5 446	

N'fifikh (Upstream)		(Per Hectare)					
Barley	Unit	Q'ty	Unit Price (financial)	Conv. factor	Unit Price (economic)	Amount (DH)	
1. Gross Income							
1) Grain	kg	4 000	1.54	0.66	1.01	4 040	
2) Strow	UF	1 000	3.00	0.86	2.58	2 580	
Sub-total						6 620	
2. Production Cost							
1) Seed	kg	120	4.00	0.85	3.40	408	
2) Manure	ton						
3) Fertilizer							
- Urea	kg	261	2.72	0.85	2.31	603	
- TSP	kg	187	2.20	1.01	2.22	416	
- K2SO4	kg	180	2.28	0.71	1.62	291	
4) Agriculture Chemicals	ha	1	50.00	0.85	42.50	43	
5) Mechanization							
- Tractor	hr	1	239.00	0.86	205.54	206	
- Animal Traction	day	5.0	40.00	0.86	34.40	172	
- Baler	hr	1.0	159.00	0.86	136.74	137	
6) Labor Force	day	23	40.00	0.86	34.40	791	
7) Other	%	10				307	
Sub-total						3 374	
3. Net Income (1.- 2.)						3 246	

N'fifikh (Upstream and Downstream)		(Per Hectare)					
Fodder (Barley)	Unit	Q'ty	Unit Price (financial)	Conv. factor	Unit Price (economic)	Amount (DH)	
1. Gross Income							
1) Grain and strow	UF	2 300	3.00	0.86	2.58	5 934	
Sub-total						5 934	
2. Production Cost							
1) Seed	ha	120	4.00	0.86	3.44	413	
2) Manure	ton						
3) Fertilizer							
- Urea	kg	261	2.72	0.85	2.31	603	
- TSP	kg	187	2.20	1.01	2.22	416	
- K2SO4	kg	180	2.28	0.71	1.62	291	
4) Agriculture Chemicals	ha	1	50.00	0.85	42.50	43	
5) Mechanization							
- Tractor	hr	1	239.00	0.86	205.54	206	
- Animal Traction	day	5.0	40.00	0.86	34.40	172	
- Baler	hr	1.0	159.00	0.86	136.74	137	
6) Labor Force	day	23	40.00	0.86	34.40	791	
7) Other	%	10				307	
Sub-total						3 379	
3. Net Income (1.- 2.)						2 555	

N'fifikh (Upstream and Downstream)		(Per Hectare)					
Fodder (Alfalfa)	Unit	Q'ty	Unit Price (financial)	Conv. factor	Unit Price (economic)	Amount (DH)	
1. Gross Income							
1) Alfalfa	UF	10 500	5.20	0.86	4.47	46 956	
Sub-total						46 956	
2. Production Cost							
1) Seed	ha	1	360.00	0.86	309.60	310	
2) Manure	ton						
3) Fertilizer							
- Urea	kg	100	2.72	0.85	2.31	231	
- TSP	kg	300	2.20	1.01	2.22	667	
- K2SO4	kg	200	2.28	0.71	1.62	324	
4) Agriculture Chemicals	ha						
5) Mechanization							
- Tractor	hr						
- Animal Traction	day	19.0	40.00	0.86	34.40	654	
- Baler	hr						
6) Labor Force	day	114	40.00	0.86	34.40	3 922	
7) Other	%	10				611	
Sub-total						6 719	
3. Net Income (1.- 2.)						40 237	

N'fifikh (Upstream and Downstream)		(Per Hectare)					
Potato	Unit	Q'ty	Unit Price (financial)	Conv. factor	Unit Price (economic)	Amount (DH)	
1. Gross Income							
1) Potato	kg	31 000	1.77	1.09	1.92	59 613	
Sub-total						59 613	
2. Production Cost							
1) Seed	kg	2 000	3.50	1.15	4.03	8 050	
2) Manure	ton						
3) Fertilizer							
- Urea	kg	196	2.72	0.85	2.31	453	
- TSP	kg	200	2.20	1.01	2.22	444	
- K2SO4	kg	240	2.28	0.71	1.62	389	
4) Agriculture Chemicals	ha	1	200.00	0.85	170.00	170	
5) Mechanization							
- Tractor	ha	1	497.00	0.86	427.42	427	
- Animal Traction	day	19	40.00	0.86	34.40	654	
- Baler	unit						
6) Labor Force	day	120	40.00	0.86	34.40	4 128	
7) Other	%	15				2 207	
Sub-total						16 922	
3. Net Income (1.- 2.)						42 691	

Table XVIII.2.4: Revenu net après installation des équipements d'irrigation (2/6)
(Financial and Economic Prices, Per Hectare)

N'fikh (Upstream and Dowstream) (Per Hectare)						
Grapes	Unit	Qty	Unit Price (financial)	Conv. factor	Unit Price (economic)	Amount (DH)
1. Gross Income						
1) Grapes	kg	10 000	2.51	1.04	2.60	26 010
Sub-total						26 010
2. Production Cost						
1) Seed						
2) Manure	ton					
3) Fertilizer	ha					
- 12-24-12	kg	400	2.52	0.85	2.14	857
- TSP	kg					
- K2SO4	kg					
4) Agriculture Chemicals	ha	1	500.00	0.85	425.00	425
5) Mechanization						
- Tractor	ha	1	142.00	0.86	122.12	122
- Animal Traction	day					
- Other	ha	1	800.00	0.86	688.00	688
6) Labor Force	day	31	40.00	0.86	34.40	1 066
7) Other	%	20				632
Sub-total *2						3 790
3. Net Income (1.- 2.)						22 220

N'fikh (Upstream) (Per Hectare)						
Olive	Unit	Qty	Unit Price (financial)	Conv. factor	Unit Price (economic)	Amount (DH)
1. Gross Income						
1) Olive	kg	10 000	2.07	1.13	2.35	23 490
Sub-total						23 490
2. Production Cost						
1) Seed (lifetime: 30 years, replacement cost only)	unit	1	140	0.86	120	120
2) Manure	ton					
3) Fertilizer						
- Urea	kg	130	2.72	0.85	2.31	301
- TSP	kg	111	2.20	1.01	2.22	247
- K2SO4	kg	60	2.28	0.71	1.62	97
4) Agriculture Chemicals	ha	1	150.00	0.85	127.50	128
5) Mechanization						
- Tractor	ha					
- Animal Traction	day	12	40.00	0.86	34.40	413
- Baler	hr					
6) Labor Force	day	68	40.00	0.86	34.40	2 339
7) Other	%	15				547
Sub-total						4 192
3. Net Income (1.- 2.)						19 298

N'fikh (Upstream) (Per Hectare)						
Broad Bean	Unit	Qty	Unit Price (financial)	Conv. factor	Unit Price (economic)	Amount (DH)
1. Gross Income						
1) Broad bean	kg	15 000	3.93	0.86	3.38	50 700
Sub-total						50 700
2. Production Cost						
1) Seed	kg	60	10.00	0.98	9.85	591
2) Manure	ton					
3) Fertilizer						
- Urea	kg	72	2.72	0.85	2.31	166
- TSP	kg	244	2.20	1.01	2.22	542
- K2SO4	kg	300	2.28	0.71	1.62	486
4) Agriculture Chemicals	ha	1	50.00	0.85	42.50	43
5) Mechanization						
- Tractor	ha	1	378.00	0.86	325.08	325
- Animal Traction	day	21.0	40.00	0.86	34.40	722
- Baler	hr					
6) Labor Force	day	194	40.00	0.86	34.40	6 674
7) Other	%	10				955
Sub-total						10 504
3. Net Income (1.- 2.)						40 196

N'fikh (Upstream and Dowstream) (Per Hectare)						
Tomato	Unit	Qty	Unit Price (financial)	Conv. factor	Unit Price (economic)	Amount (DH)
1. Gross Income						
1) Tomato	kg	50 000	1.44	1.42	2.05	102 400
Sub-total						102 400
2. Production Cost						
1) Seed	kg	0.5	820	0.86	705	353
2) Manure	ton					
3) Fertilizer						
- Urea	kg	200	2.72	0.85	2.31	462
- TSP	kg	200	2.20	1.01	2.22	444
- K2SO4	kg	340	2.28	0.71	1.62	550
4) Agriculture Chemicals	ha	1	600.00	0.85	510.00	510
5) Mechanization						
- Tractor	ha	1	378.00	0.86	325.08	325
- Animal Traction	day	38.0	40.00	0.86	34.40	1 307
- Baler	hr					
6) Labor Force	day	200	40.00	0.86	34.40	6 880
7) Other	%	20				2 166
Sub-total						12 997
3. Net Income (1.- 2.)						89 403

N'fikh (Dowstream) (Per Hectare)						
Grape for new cultivation (Production cost only)	Unit	Qty	Unit Price (financial)	Conv. factor	Unit Price (economic)	Amount (DH)
1st year						
1) Plowing	pers.	1	800.00	0.86	688.00	688
2) Leveling	pers.	1	150.00	0.86	129.00	129
3) Crop covering	pers.	3	150.00	0.86	129.00	387
4) Staking	ha	1	400.00	0.86	344.00	344
5) Manure	ton				0.00	0
6) Fertilizer	100kg	4	240.00	0.85	204.00	816
7) Seedling	unit	2 000	6.00	0.86	5.16	10 320
8) Manpower	day	15	40.00	0.86	34.40	516
Total						13 200
2nd & 3rd year						
1) Maintenance work	pers.	2	150.00	0.86	129.00	258
2) Supporter	unit	2 000	1.50	0.86	1.29	2 580
3) Treatment	unit	1	500.00	0.86	430.00	430
4) Irrigation	m3	0	0.50	0.86	0.43	0
5) Manpower	day	9	40.00	0.86	34.40	310
6) Fertilizer	100kg	3	240.00	0.85	204.00	612
7) Cutting	day	2	40.00	0.86	34.40	69
Total						4 001

Taskourt (Perennial, Seasonal, and Flood Irrigation Areas) (Per Hectare)						
Soft wheat	Unit	Qty	Unit Price (financial)	Conv. factor	Unit Price (economic)	Amount (DH)
1. Gross Income						
1) Grain	kg	4 000	2.89	0.52	1.50	6 011
2) Strow	UF	1 000	3.00	0.86	2.58	2 580
Sub-total						8 591
2. Production Cost						
1) Seed	kg	120	4.00	0.72	2.88	346
2) Manure	ton					
3) Fertilizer						
- Urea	kg	261	2.72	0.85	2.31	603
- TSP	kg	187	2.20	1.01	2.22	416
- K2SO4	kg	180	2.28	0.71	1.62	291
4) Agriculture Chemicals	ha	1	50.00	0.85	42.50	43
5) Mechanization						
- Tractor	hr	1	239.00	0.86	205.54	206
- Animal Traction	day	5.0	40.00	0.86	34.40	172
- Baler	hr	1.0	159.00	0.86	136.74	137
6) Labor Force	day	23	40.00	0.86	34.40	791
7) Other	%	10				301
Sub-total						3 306
3. Net Income (1.- 2.)						5 286

Table XVIII2.2.4: Revenu net après installation des équipements d'irrigation (3/6)
(Financial and Economic Prices, Per Hectare)

Taskourt (Seasonal and Flood Irrigation Areas) (Per Hectare)						
Barley	Unit	Qty	Unit Price (financial)	Conv. factor	Unit Price (economic)	Amount (DH)
1. Gross Income						
1) Grain	kg	4 000	2.52	0.44	1.10	4 396
2) Straw	UF	1 000	3.00	0.86	2.58	2 580
Sub-total						6 976
2. Production Cost						
1) Seed	kg	120	4.00	0.87	3.49	418
2) Manure	ton					
3) Fertilizer						
- Urea	kg	261	2.72	0.85	2.31	603
- TSP	kg	187	2.20	1.01	2.22	416
- K2SO4	kg	180	2.28	0.71	1.62	291
4) Agriculture Chemicals	ha	1	50.00	0.85	42.50	43
5) Mechanization						
- Tractor	hr	1	239.00	0.86	205.54	206
- Animal Traction	day	5.0	40.00	0.86	34.40	172
- Baler	hr	1.0	159.00	0.86	136.74	137
6) Labor Force	day	23	40.00	0.86	34.40	791
7) Other	%	10				308
Sub-total						3 385
3. Net Income (1.- 2.)						3 591

Taskourt (Seasonal and Flood Irrigation Areas) (Per Hectare)						
Almond	Unit	Qty	Unit Price (financial)	Conv. factor	Unit Price (economic)	Amount (DH)
1. Gross Income						
1) Almond	kg	3 500	48.24	0.86	41.49	145 201
Sub-total						145 201
2. Production Cost						
1) Seed (No new planting considered)						
2) Manure	ton					
3) Fertilizer	ha	1	848.00	0.85	720.80	721
- Urea						
- TSP						
- K2SO4						
4) Agriculture Chemicals	ha					
5) Mechanization						
- Tractor	hr					
- Animal Traction	day					
- Baler	hr					
6) Labor Force	day	31	40.00	0.86	34.40	1 057
7) Other	%	10				178
Sub-total						1 956
3. Net Income (1.- 2.)						143 245

Taskourt (Perennial, Seasonal, and Flood Irrigation Areas) (Per Hectare)						
Fodder (Alfalfa)	Unit	Qty	Unit Price (financial)	Conv. factor	Unit Price (economic)	Amount (DH)
1. Gross Income						
1) Alfalfa	UF	10 500	5.20	0.86	4.47	46 956
Sub-total						46 956
2. Production Cost						
1) Seed	ha	1	360.00	0.86	309.60	310
2) Manure	ton					
3) Fertilizer						
- Urea	kg	100	2.72	0.85	2.31	231
- TSP	kg	300	2.20	1.01	2.22	667
- K2SO4	kg	200	2.28	0.71	1.62	324
4) Agriculture Chemicals	ha					
5) Mechanization						
- Tractor	hr					
- Animal Traction	day	19.0	40.00	0.86	34.40	654
- Baler	hr					
6) Labor Force	day	114	40.00	0.86	34.40	3 922
7) Other	%	10				611
Sub-total						6 719
3. Net Income (1.- 2.)						40 237

Taskourt (Perennial, Seasonal, and Flood Irrigation Areas) (Per Hectare)						
Watermelon	Unit	Qty	Unit Price (financial)	Conv. factor	Unit Price (economic)	Amount (DH)
1. Gross Income						
1) Watermelon	kg	31 000	4.00	0.86	3.44	106 640
Sub-total						106 640
2. Production Cost						
1) Seed	kg	3	250	0.86	215	645
2) Manure	ton					
3) Fertilizer						
- Urea	kg	457	2.72	0.85	2.31	1 057
- TSP	kg	467	2.20	1.01	2.22	1 038
- K2SO4	kg	300	2.28	0.71	1.62	486
4) Agriculture Chemicals	ha	1	600.00	0.85	510.00	510
5) Mechanization						
- Tractor	ha	1	378.00	0.86	325.08	325
- Animal Traction	day	21.0	41.00	0.86	35.26	740
- Baler	hr					
6) Labor Force	day	155	40.00	0.86	34.40	5 332
7) Other	%	15				1 520
Sub-total						11 653
3. Net Income (1.- 2.)						94 987

Taskourt (Perennial, Seasonal, and Flood Irrigation Areas) (Per Hectare)						
Tomato	Unit	Qty	Unit Price (financial)	Conv. factor	Unit Price (economic)	Amount (DH)
1. Gross Income						
1) Tomato	kg	50 000	2.04	1.17	2.38	119 150
Sub-total						119 150
2. Production Cost						
1) Seed	kg	0.5	820	0.86	705	353
2) Manure	ton					
3) Fertilizer						
- Urea	kg	200	2.72	0.85	2.31	462
- TSP	kg	200	2.20	1.01	2.22	444
- K2SO4	kg	340	2.28	0.71	1.62	550
4) Agriculture Chemicals	ha	1	600.00	0.85	510.00	510
5) Mechanization						
- Tractor	ha	1	378.00	0.86	325.08	325
- Animal Traction	day	38.0	40.00	0.86	34.40	1 307
- Baler	hr					
6) Labor Force	day	200	40.00	0.86	34.40	6 880
7) Other	%	20				2 166
Sub-total						12 997
3. Net Income (1.- 2.)						106 153

Taskourt (Perennial, Seasonal, and Flood Irrigation Areas) (Per Hectare)						
Olive	Unit	Qty	Unit Price (financial)	Conv. factor	Unit Price (economic)	Amount (DH)
1. Gross Income						
1) Olive	kg	10 000	2.61	1.05	2.74	27 390
Sub-total						27 390
2. Production Cost						
1) Seed (lifetime: 30 years)	unit	1	140	0.86	120	120
2) Manure	ton					
3) Fertilizer						
- Urea	kg	130	2.72	0.85	2.31	301
- TSP	kg	111	2.20	1.01	2.22	247
- K2SO4	kg	60	2.28	0.71	1.62	97
4) Agriculture Chemicals	ha	1	150.00	0.85	127.50	128
5) Mechanization						
- Tractor	ha					
- Animal Traction	day	12	40.00	0.86	34.40	413
- Baler	hr					
6) Labor Force	day	68	40.00	0.86	34.40	2 339
7) Other	%	15				547
Sub-total						4 192
3. Net Income (1.- 2.)						23 198

Table XVIII.2.4: Revenu net après installation des équipements d'irrigation (4/6)
(Financial and Economic Prices, Per Hectare)

Timkit (Ifegh, Tinejdd, and Chtam) (Per Hectare)						
Hard wheat	Unit	Q'ty	Unit Price (financial)	Conv. factor	Unit Price (economic)	Amount (DH)
1. Gross Income						
1) Grain	kg	4 000	3.33	0.56	1.88	7 516
2) Straw	UF	1 000	3.00	0.86	2.58	2 580
Sub-total						10 096
2. Production Cost						
1) Seed	kg	120	4.00	0.96	3.84	460
2) Manure	ton					
3) Fertilizer						
- Urea	kg	261	2.72	0.85	2.31	603
- TSP	kg	187	2.20	1.01	2.22	416
- K2SO4	kg	180	2.28	0.71	1.62	291
4) Agriculture Chemicals	ha	1	50.00	0.85	42.50	43
5) Mechanization						
- Tractor	unit	1	239.00	0.86	205.54	206
- Animal Traction	day	5.0	40.00	0.86	34.40	172
- Baler	unit	1.0	159.00	0.86	136.74	137
6) Labor Force	day	23	40.00	0.86	34.40	791
7) Other	%	10				312
Sub-total						3 431
3. Net Income (1.- 2.)						6 665

Timkit (Ifegh) (Per Hectare)						
Barley	Unit	Q'ty	Unit Price (financial)	Conv. factor	Unit Price (economic)	Amount (DH)
1. Gross Income						
1) Grain	kg	4 000	1.98	0.67	1.33	5 300
2) Straw	UF	1 000	3.00	0.86	2.58	2 580
Sub-total						7 880
2. Production Cost						
1) Seed	kg	120	4.00	0.93	3.71	445
2) Manure	ton					
3) Fertilizer						
- Urea	kg	261	2.72	0.85	2.31	603
- TSP	kg	187	2.20	1.01	2.22	416
- K2SO4	kg	180	2.28	0.71	1.62	291
4) Agriculture Chemicals	ha	1	50.00	0.85	42.50	43
5) Mechanization						
- Tractor	unit	1	239.00	0.86	205.54	206
- Animal Traction	day	5.0	40.00	0.86	34.40	172
- Baler	unit	1.0	159.00	0.86	136.74	137
6) Labor Force	day	23	40.00	0.86	34.40	791
7) Other	%	10				310
Sub-total						3 414
3. Net Income (1.- 2.)						4 466

Timkit (Ifegh, Tinejdd, and Chtam) (Per Hectare)						
Alfalfa	Unit	Q'ty	Unit Price (financial)	Conv. factor	Unit Price (economic)	Amount (DH)
1. Gross Income						
1) Alfalfa	UF	10 500	5.20	0.86	4.47	46 956
Sub-total						46 956
2. Production Cost						
1) Seed	ha	1	360.00	0.86	309.60	310
2) Manure	ton					
3) Fertilizer						
- Urea	kg	100	2.72	0.85	2.31	231
- TSP	kg	300	2.20	1.01	2.22	667
- K2SO4	kg	200	2.28	0.71	1.62	324
4) Agriculture Chemicals	ha					
5) Mechanization						
- Tractor	hr					
- Animal Traction	day	19.0	40.00	0.86	34.40	654
- Baler	hr					
6) Labor Force	day	114	40.00	0.86	34.40	3 922
7) Other	%	10				611
Sub-total						6 719
3. Net Income (1.- 2.)						40 237

Timkit (Ifegh and Tinejdd) (Per Hectare)						
Potato	Unit	Q'ty	Unit Price (financial)	Conv. factor	Unit Price (economic)	Amount (DH)
1. Gross Income						
1) Potato	kg	31 000	2.34	0.90	2.11	65 379
Sub-total						65 379
2. Production Cost						
1) Seed	kg	2000	3.50	1.24	4.34	8 686
2) Manure	ton					
3) Fertilizer						
- Urea	kg	196	2.72	0.85	2.31	453
- TSP	kg	200	2.20	1.01	2.22	444
- K2SO4	kg	240	2.28	0.71	1.62	389
4) Agriculture Chemicals	ha	1	200.00	0.85	170.00	170
5) Mechanization						
- Tractor	ha	1	497.00	0.86	427.42	427
- Animal Traction	day	19	40.00	0.86	34.40	654
- Baler	unit					
6) Labor Force	day	120	40.00	0.86	34.40	4 128
7) Other	%	15				2 303
Sub-total						17 654
3. Net Income (1.- 2.)						47 725

Timkit (Ifegh) (Per Hectare)						
Tomato	Unit	Q'ty	Unit Price (financial)	Conv. factor	Unit Price (economic)	Amount (DH)
1. Gross Income						
1) Tomato	kg	50 000	2.29	1.08	2.47	123 300
Sub-total						123 300
2. Production Cost						
1) Seed	kg	0.5	820	0.86	705	353
2) Manure	ton					
3) Fertilizer						
- Urea	kg	200	2.72	0.85	2.31	462
- TSP	kg	200	2.20	1.01	2.22	444
- K2SO4	kg	340	2.28	0.71	1.62	550
4) Agriculture Chemicals	ha	1	600.00	0.85	510.00	510
5) Mechanization						
- Tractor	ha	1	378.00	0.86	325.08	325
- Animal Traction	day	38.0	40.00	0.86	34.40	1 307
- Baler	hr					
6) Labor Force	day	200	40.00	0.86	34.40	6 880
7) Other	%	20				2 166
Sub-total						12 997
3. Net Income (1.- 2.)						110 303

Timkit (Ifegh, Tinejdd, and Chtam) (Per Hectare)						
Dates	Unit	Q'ty	Unit Price (financial)	Conv. factor	Unit Price (economic)	Amount (DH)
1. Gross Income						
1) Dates	kg	3 500	8.00	1.41	11.31	39 568
Sub-total						39 568
2. Production Cost						
1) Seed (lifetime: 50 years, replacement cost only)						
2) Manure	ton					
3) Fertilizer						
- Urea	kg	400	2.52	0.85	2.14	857
- TSP						
- K2SO4						
4) Agriculture Chemicals	ha					
5) Mechanization						
- Tractor	hr					
- Animal Traction	day					
- Baler	hr					
6) Labor Force	day	50	40.00	0.86	34.40	1 720
7) Other	%					
Sub-total						2 577
3. Net Income (1.- 2.)						36 991

Table XVIII.2.2.4: Revenu net après installation des équipements d'irrigation (5/6)
(Financial and Economic Prices, Per Hectare)

Timkit (Tinejdad and Chtam)							(Per Hectare)
Watermelon	Unit	Q'ty	Unit Price (financial)	Conv. factor	Unit Price (economic)	Amount (DH)	
1. Gross Income							
1) Watermelon	kg	31 000	3.75	0.86	3.23	99 975	
Sub-total						99 975	
2. Production Cost							
1) Seed	kg	3	250	0.86	215	645	
2) Manure	ton						
3) Fertilizer							
- Urea	kg	457	2.72	0.85	2.31	1 057	
- TSP	kg	467	2.20	1.01	2.22	1 038	
- K2SO4	kg	300	2.28	0.71	1.62	486	
4) Agriculture Chemicals	ha	1	600.00	0.85	510.00	510	
5) Mechanization							
- Tractor	ha	1	378.00	0.86	325.08	325	
- Animal Traction	day	21.0	41.00	0.86	35.26	740	
- Baler	hr						
6) Labor Force	day	155	40.00	0.86	34.40	5 332	
7) Other	%	15				1 520	
Sub-total						11 653	
3. Net Income (1.- 2.)						88 322	

Timkit (Tinejdad and Chtam)							(Per Hectare)
Olive	Unit	Q'ty	Unit Price (financial)	Conv. factor	Unit Price (economic)	Amount (DH)	
1. Gross Income							
1) Olive	kg	10 000	2.69	0.99	2.66	26 580	
Sub-total						26 580	
2. Production Cost							
1) Seed (lifetime: 30 years, replacement cost only)	unit	1	140	0.86	120	120	
2) Manure	ton						
3) Fertilizer							
- Urea	kg	130	2.72	0.85	2.31	301	
- TSP	kg	111	2.20	1.01	2.22	247	
- K2SO4	kg	60	2.28	0.71	1.62	97	
4) Agriculture Chemicals	ha	1	150.00	0.85	127.50	128	
5) Mechanization							
- Tractor	ha						
- Animal Traction	day	12	40.00	0.86	34.40	413	
- Baler	hr						
6) Labor Force	day	68	40.00	0.86	34.40	2 339	
7) Other	%	15				547	
Sub-total						4 192	
3. Net Income (1.- 2.)						22 388	

Timkit (Chtam) for the first three years							(Per Hectare)
(Production cost only)							
Dates	Unit	Q'ty	Unit Price (financial)	Conv. factor	Unit Price (economic)	Amount (DH)	
Plantation, 1st year							
1) Seeding	tree	100	170.00	0.86	146.20	14 620	
2) Cultivation							
Digging	hour	8	56.00	0.86	48.16	385	
Crop covering	day	30	40.00	0.86	34.40	1 032	
3) Fertilization							
Fertilizer for dressing	100kg	10	252.00	0.85	214.20	2 142	
Manpower for dressing	day	100	40.00	0.86	34.40	3 440	
Total						21 619	
Cultivation, annual cost of 2nd & 3rd year							
1) Fertilization							
Fertilizer for dressing	100kg	3	252.00	0.85	214.20	643	
Manpower for dressing	day	2	40.00	0.86	34.40	69	
2) Maintenance	day	28	40.00	0.86	34.40	963	
Total						1 675	

Timkit (Chtam) for the first three years							(Per Hectare)
(Production cost only)							
Olive	Unit	Q'ty	Unit Price (financial)	Conv. factor	Unit Price (economic)	Amount (DH)	
Plantation, 1st year							
1) Seeding	tree	200	19.00	0.86	16.34	3 268	
2) Cultivation							
Digging	hour	6	56.00	0.86	48.16	289	
Crop covering	day	20	40.00	0.86	34.40	688	
3) Fertilization							
Fertilizer for dressing	100kg	3	252.00	0.85	214.20	643	
Manpower for dressing	day	14	40.00	0.86	34.40	482	
4) Maintenance	day	8	40.00	0.86	34.40	275	
Total						5 645	
Cultivation, annual cost of 2nd & 3rd year							
1) Fertilization							
Fertilizer for dressing	100kg	3	212.00	0.85	180.20	541	
Manpower for dressing	day	14	40.00	0.86	34.40	482	
2) Maintenance	day	2	40.00	0.86	34.40	69	
Total						1 092	

Azghar							(Per Hectare)
Hard wheat	Unit	Q'ty	Unit Price (financial)	Conv. factor	Unit Price (economic)	Amount (DH)	
1. Gross Income							
1) Grain	kg	4 000	3.23	0.52	1.67	6 692	
2) Strow	UF	1 000	3.00	0.86	2.58	2 580	
Sub-total						9 272	
2. Production Cost							
1) Seed	kg	120	4.00	0.91	3.64	437	
2) Manure	ton						
3) Fertilizer							
- Urea	kg	261	2.72	0.85	2.31	603	
- TSP	kg	187	2.20	1.01	2.22	416	
- K2SO4	kg	180	2.28	0.71	1.62	291	
4) Agriculture Chemicals	ha	1	50.00	0.85	42.50	43	
5) Mechanization							
- Tractor	hr	1	239.00	0.86	205.54	206	
- Animal Traction	day	5.0	40.00	0.86	34.40	172	
- Baler	hr	1.0	159.00	0.86	136.74	137	
6) Labor Force	day	23	40.00	0.86	34.40	791	
7) Other	%	10				310	
Sub-total						3 406	
3. Net Income (1.- 2.)						5 866	

Azghar							(Per Hectare)
Barley	Unit	Q'ty	Unit Price (financial)	Conv. factor	Unit Price (economic)	Amount (DH)	
1. Gross Income							
1) Grain	kg	4 000	2.00	0.56	1.12	4 480	
2) Strow	UF	1 000	3.00	0.86	2.58	2 580	
Sub-total						7 060	
2. Production Cost							
1) Seed	kg	120	4.00	0.88	3.51	421	
2) Manure	ton						
3) Fertilizer							
- Urea	kg	261	2.72	0.85	2.31	603	
- TSP	kg	187	2.20	1.01	2.22	416	
- K2SO4	kg	180	2.28	0.71	1.62	291	
4) Agriculture Chemicals	ha	1	50.00	0.85	42.50	43	
5) Mechanization							
- Tractor	hr	1	239.00	0.86	205.54	206	
- Animal Traction	day	5.0	40.00	0.86	34.40	172	
- Baler	hr	1.0	159.00	0.86	136.74	137	
6) Labor Force	day	23	40.00	0.86	34.40	791	
7) Other	%	10				308	
Sub-total						3 388	
3. Net Income (1.- 2.)						3 672	

Table XVIII.2.4: Revenu net après installation des équipements d'irrigation (6/6)
(Financial and Economic Prices, Per Hectare)

Azghar (Per Hectare)						
Fodder (Barley)	Unit	Q'ty	Unit Price (financial)	Conv. factor	Unit Price (economic)	Amount (DH)
1. Gross Income						
1) Grain and strow	UF	2 300	3.00	0.86	2.58	5 934
Sub-total						5 934
2. Production Cost						
1) Seed	kg	120	4.00	0.86	3.44	413
2) Manure	ton					
3) Fertilizer						
- Urea	kg	261	2.72	0.85	2.31	603
- TSP	kg	187	2.20	1.01	2.22	416
- K2SO4	kg	180	2.28	0.71	1.62	291
4) Agriculture Chemicals	ha	1	50.00	0.85	42.50	43
5) Mechanization						
- Tractor	hr	1	239.00	0.86	205.54	206
- Animal Traction	day	5.0	40.00	0.86	34.40	172
- Baler	hr	1.0	159.00	0.86	136.74	137
6) Labor Force	day	23	40.00	0.86	34.40	791
7) Other	%	10				307
Sub-total						3 379
3. Net Income (1.- 2.)						2 555

Azghar (Per Hectare)						
Fodder (Alfalfa)	Unit	Q'ty	Unit Price (financial)	Conv. factor	Unit Price (economic)	Amount (DH)
1. Gross Income						
1) Alfalfa	UF	10 500	5.20	0.86	4.47	46 956
Sub-total						46 956
2. Production Cost						
1) Seed	ha	1	360.00	0.86	309.60	310
2) Manure	ton					
3) Fertilizer						
- Urea	kg	100	2.72	0.85	2.31	231
- TSP	kg	300	2.20	1.01	2.22	667
- K2SO4	kg	200	2.28	0.71	1.62	324
4) Agriculture Chemicals	ha					
5) Mechanization						
- Tractor	hr					
- Animal Traction	day	19.0	40.00	0.86	34.40	654
- Baler	hr					
6) Labor Force	day	114	40.00	0.86	34.40	3 922
7) Other	%	10				611
Sub-total						6 719
3. Net Income (1.- 2.)						40 237

Azghar (Per Hectare)						
Summer Vegetable (Broad Bean)	Unit	Q'ty	Unit Price (financial)	Conv. factor	Unit Price (economic)	Amount (DH)
1. Gross Income						
1) Broad bean	kg	15 000	3.73	0.86	3.21	48 120
Sub-total						48 120
2. Production Cost						
1) Seed	kg	60	10.00	0.97	9.74	584
2) Manure	ton					
3) Fertilizer						
- Urea	kg	72	2.72	0.85	2.31	166
- TSP	kg	244	2.20	1.01	2.22	542
- K2SO4	kg	300	2.28	0.71	1.62	486
4) Agriculture Chemicals	ha	1	50.00	0.85	42.50	43
5) Mechanization						
- Tractor	ha	1	378.00	0.86	325.08	325
- Animal Traction	day	21.0	40.00	0.86	34.40	722
- Baler	hr					
6) Labor Force	day	194	40.00	0.86	34.40	6 674
7) Other	%	10				954
Sub-total						10 496
3. Net Income (1.- 2.)						37 624

Azghar (Per Hectare)						
Vegetable (Potato)	Unit	Q'ty	Unit Price (financial)	Conv. factor	Unit Price (economic)	Amount (DH)
1. Gross Income						
1) Potato	kg	31 000	2.99	0.88	2.63	81 592
Sub-total						81 592
2. Production Cost						
1) Seed	kg	2000	3.50	1.18	4.14	8 276
2) Manure	ton					
3) Fertilizer						
- Urea	kg	196	2.72	0.85	2.31	453
- TSP	kg	200	2.20	1.01	2.22	444
- K2SO4	kg	240	2.28	0.71	1.62	389
4) Agriculture Chemicals	ha	1	200.00	0.85	170.00	170
5) Mechanization						
- Tractor	ha	1	497.00	0.86	427.42	427
- Animal Traction	day	19	40.00	0.86	34.40	654
- Baler	unit					
6) Labor Force	day	120	40.00	0.86	34.40	4 128
7) Other	%	15				2 241
Sub-total						17 182
3. Net Income (1.- 2.)						64 410

Azghar (Per Hectare)						
Summer Vegetable (Tomato)	Unit	Q'ty	Unit Price (financial)	Conv. factor	Unit Price (economic)	Amount (DH)
1. Gross Income						
1) Tomato	kg	50 000	2.07	1.16	2.40	119 750
Sub-total						119 750
2. Production Cost						
1) Seed	kg	0.5	820	0.86	705	353
2) Manure	ton					
3) Fertilizer						
- Urea	kg	200	2.72	0.85	2.31	462
- TSP	kg	200	2.20	1.01	2.22	444
- K2SO4	kg	340	2.28	0.71	1.62	550
4) Agriculture Chemicals	ha	1	600.00	0.85	510.00	510
5) Mechanization						
- Tractor	ha	1	378.00	0.86	325.08	325
- Animal Traction	day	38.0	40.00	0.86	34.40	1 307
- Baler	hr					
6) Labor Force	day	200	40.00	0.86	34.40	6 880
7) Other	%	20				2 166
Sub-total						12 997
3. Net Income (1.- 2.)						106 753

Azghar (Per Hectare)						
Fruits (Olive)	Unit	Q'ty	Unit Price (financial)	Conv. factor	Unit Price (economic)	Amount (DH)
1. Gross Income						
1) Olive	kg	10 000	3.04	0.99	3.02	30 200
Sub-total						30 200
2. Production Cost						
1) Seed (lifetime: 30 years,	unit	1	140	0.86	120	120
2) Manure	ton					
3) Fertilizer						
- Urea	kg	130	2.72	0.85	2.31	301
- TSP	kg	111	2.20	1.01	2.22	247
- K2SO4	kg	60	2.28	0.71	1.62	97
4) Agriculture Chemicals	ha	1	150.00	0.85	127.50	128
5) Mechanization						
- Tractor	ha					
- Animal Traction	day	12	40.00	0.86	34.40	413
- Baler	hr					
6) Labor Force	day	68	40.00	0.86	34.40	2 339
7) Other	%	15				547
Sub-total						4 192
3. Net Income (1.- 2.)						26 008

Table XVIII2.2.5: Revenu agricole prévu avec le projet (1/3)
(Economic Price, DH/ha)

N'fifikh (upstream area) - applied for NU1, NU4, and NU5

Crops		Benefit					Expenditure		Net Benefit (DH) g=d-f	
		Occupancy (%) a	Yield		Unit price		Benefit (DH) d=a*b*c	Unit cost (DH/ha) e		Net cost (DH) f=e*a
			Qty. b	Unit	(DH) c	Unit				
Cereals	Soft wheat	60	4.0 (ton/ha)	1.41 (DH/kg)		3 394	3 296	1 978	1 416	
Fodder 1	Barley	5	2 300 UF	2.58 UF		297	3 379	169	128	
Fodder 2	Alfalfa	5	10 500 UF	4.47 UF		2 347	6 719	336	2 011	
Vegetable 1	Potato	15	31 (ton/ha)	1.92 (DH/kg)		8 942	16 922	2 538	6 404	
Vegetable 2	Totato	5	50 (ton/ha)	2.05 (DH/kg)		5 120	12 997	650	4 470	
Tree crop 1	Grape	5	10 (ton/ha)	2.60 (DH/kg)		1 301	3 790	190	1 111	
Tree crop 2	Olive	5	10 (ton/ha)	2.35 (DH/kg)		1 175	4 192	210	965	
Fodder from cereals	-	60	1 000 UF	2.58 UF		1 548	-	-	1 548	
Total		160				24 124		6 071	18 053	

N'fifikh (upstream area) - applied for NU2

Crops		Benefit					Expenditure		Net Benefit (DH) g=d-f	
		Occupancy (%) a	Yield		Unit price		Benefit (DH) d=a*b*c	Unit cost (DH/ha) e		Net cost (DH) f=e*a
			Qty. b	Unit	(DH) c	Unit				
Cereals 1	Soft wheat	50	4.0 (ton/ha)	1.41 (DH/kg)		2 828	3 296	1 648	1 180	
Cereals 2	Hard wheat	33	4.0 (ton/ha)	1.56 (DH/kg)		2 064	3 390	1 119	945	
Fodder	Barley	5	2 300 UF	2.58 UF		297	3 379	169	128	
Regume	Broad bean	5	15 (ton/ha)	3.38 (DH/kg)		2 535	10 504	525	2 010	
Vegetable	Potato	2	31 (ton/ha)	1.92 (DH/kg)		1 192	16 922	338	854	
Tree crop	Grape	5	10 (ton/ha)	2.60 (DH/kg)		1 301	3 790	190	1 111	
Fodder from cereals 1	-	50	1 000 UF	2.58 UF		1 290	-	-	1 290	
Fodder from cereals 2	-	33	1 000 UF	2.58 UF		851	-	-	851	
Total		183				12 358		3 989	8 369	

N'fifikh (upstream area) - applied for NU3

Crops		Benefit					Expenditure		Net Benefit (DH) g=d-f	
		Occupancy (%) a	Yield		Unit price		Benefit (DH) d=a*b*c	Unit cost (DH/ha) e		Net cost (DH) f=e*a
			Qty. b	Unit	(DH) c	Unit				
Cereals	Soft wheat	30	4.0 (ton/ha)	1.41 (DH/kg)		1 697	3 296	989	708	
Fodder 1	Barley	12.5	2 300 UF	2.58 UF		742	3 379	422	320	
Fodder 2	Alfalfa	12.5	10 500 UF	4.47 UF		5 867	6 719	840	5 027	
Vegetable 1	Potato	15	31 (ton/ha)	1.92 (DH/kg)		8 942	16 922	2 538	6 404	
Vegetable 2	Totato	15	50 (ton/ha)	2.05 (DH/kg)		15 360	12 997	1 950	13 410	
Tree crop 1	Grape	7.5	10 (ton/ha)	2.60 (DH/kg)		1 951	3 790	284	1 667	
Tree crop 2	Olive	7.5	10 (ton/ha)	2.35 (DH/kg)		1 762	4 192	314	1 448	
Fodder from cereals	-	30	1 000 UF	2.58 UF		774	-	-	774	
Total		130				37 095		7 337	29 758	

N'fifikh (downstream area) - applied for ND1 and ND2

Crops		Benefit					Expenditure		Net Benefit (DH) g=d-f	
		Occupancy (%) a	Yield		Unit price		Benefit (DH) d=a*b*c	Unit cost (DH/ha) e		Net cost (DH) f=e*a
			Qty. b	Unit	(DH) c	Unit				
Cereals	Soft wheat	55	4.0 (ton/ha)	1.41 (DH/kg)		3 111	3 296	1 813	1 298	
Fodder 1	Barley	12.5	2 300 UF	2.58 UF		742	3 379	422	320	
Fodder 2	Alfalfa	2.5	10 500 UF	4.47 UF		1 173	6 719	168	1 005	
Vegetable 1	Potato	10	31 (ton/ha)	1.92 (DH/kg)		5 961	16 922	1 692	4 269	
Vegetable 2	Tomato	5	50 (ton/ha)	2.05 (DH/kg)		5 120	12 997	650	4 470	
Tree crop	Grape	15	10 (ton/ha)	2.60 (DH/kg)		3 902	3 790	569	3 333	
Fodder from cereals	-	55	1 000 UF	2.58 UF		1 419	-	-	1 419	
Total		155				21 428		5 314	16 114	

Table XVIII.2.5: Revenu agricole prévu avec le projet (2/3)
(Economic Price, DH/ha)

Taskourt (Perennial, Seasonal, and Flood Irrigation Area) - applied for TA1, TA2, TA3, and TA4

Crops		Benefit						Expenditure		Net Benefit (DH) g=d-f
		Occupancy (%) a	Yield		Unit price		Benefit (DH) d=a*b*c	Unit cost (DH/ha) e	Net cost (DH) f=e*a	
			Qty. b	Unit (ton/ha)	(DH) c	Unit				
Cereals 1	Soft wheat	60	4.0	(ton/ha)	1.50	(DH/kg)	3 607	3 306	1 984	1 623
Cereals 2	Barley	10	4.0	(ton/ha)	1.10	(DH/kg)	440	3 385	339	101
Fodder	Alfalfa	10	10 500	UF	4.47	UF	4 694	6 719	672	4 022
Vegetable 1	Watermelon	5	31	(ton/ha)	3.44	(DH/kg)	5 332	11 653	583	4 749
Vegetable 2	Tomato	5	50	(ton/ha)	2.38	(DH/kg)	5 958	12 997	650	5 308
Tree crop 1	Olive	8	10	(ton/ha)	2.74	(DH/kg)	2 191	4 192	335	1 856
Tree crop 2	Almond	2	3.5	(ton/ha)	41.49	(DH/kg)	2 904	1 956	39	2 865
Fodder from cereals 1	-	60	1 000	UF	2.58	UF	1 548	-	-	1 548
Fodder from cereals 2	-	10	1 000	UF	2.58	UF	258	-	-	258
Total		170					26 932		4 602	22 330

Timkit (Ifegh) - applied for TI1 and TI2

Crops		Benefit						Expenditure		Net Benefit (DH) g=d-f
		Occupancy (%) a	Yield		Unit price		Benefit (DH) d=a*b*c	Unit cost (DH/ha) e	Net cost (DH) f=e*a	
			Qty. b	Unit (ton/ha)	(DH) c	Unit				
Cereals 1	Hard wheat	55	4.0	(ton/ha)	1.88	(DH/kg)	4 134	3 431	1 887	2 247
Cereals 2	Barley	10	4.0	(ton/ha)	1.33	(DH/kg)	530	3 414	341	189
Fodder	Alfalfa	15	10 500	UF	4.47	UF	7 040	6 719	1 008	6 032
Vegetable 1	Potato	5	31	(ton/ha)	2.11	(DH/kg)	3 269	17 654	883	2 386
Vegetable 2	Tomato	10	50	(ton/ha)	2.47	(DH/kg)	12 330	12 997	1 300	11 030
Tree crop	Dates	10	3.5	(ton/ha)	11.31	(DH/kg)	3 957	2 577	258	3 699
Fodder from cereals 1	-	55	1 000	UF	2.58	UF	1 419	-	-	1 419
Fodder from cereals 2	-	10	1 000	UF	2.58	UF	258	-	-	258
Total		170					32 937		5 677	27 260

Timkit (Tinejad) - applied for TI1 and TI2

Crops		Benefit						Expenditure		Net Benefit (DH) g=d-f
		Occupancy (%) a	Yield		Unit price		Benefit (DH) d=a*b*c	Unit cost (DH/ha) e	Net cost (DH) f=e*a	
			Qty. b	Unit (ton/ha)	(DH) c	Unit				
Cereals	Hard wheat	55	4.0	(ton/ha)	1.88	(DH/kg)	4 134	3 431	1 887	2 247
Fodder	Alfalfa	15	10 500	UF	4.47	UF	7 040	6 719	1 008	6 032
Vegetable 1	Potato	10	31	(ton/ha)	2.11	(DH/kg)	6 538	17 654	1 765	4 773
Vegetable 2	Watermelon	5	31	(ton/ha)	3.23	(DH/kg)	4 999	11 653	583	4 416
Tree crop 1	Dates	15	3.5	(ton/ha)	11.31	(DH/kg)	5 935	2 577	387	5 548
Tree crop 2	Olive	5	10	(ton/ha)	2.66	(DH/kg)	1 329	4 192	210	1 119
Fodder from cereals	-	55	1 000	UF	2.58	UF	1 419	-	-	1 419
Total		160					31 394		5 840	25 554

Timkit (Chtam) - applied for TI1 and TI2

Crops		Benefit						Expenditure		Net Benefit (DH) g=d-f
		Occupancy (%) a	Yield		Unit price		Benefit (DH) d=a*b*c	Unit cost (DH/ha) e	Net cost (DH) f=e*a	
			Qty. b	Unit (ton/ha)	(DH) c	Unit				
Cereals	Hard wheat	75	4.0	(ton/ha)	1.88	(DH/kg)	5 637	3 431	2 573	3 064
Fodder	Alfalfa	10	10 500	UF	4.47	UF	4 694	6 719	672	4 022
Vegetable	Watermelon	5	31	(ton/ha)	3.23	(DH/kg)	4 999	11 653	583	4 416
Tree crop 1	Dates	8	3.5	(ton/ha)	11.31	(DH/kg)	3 165	2 577	206	2 959
Tree crop 2	Olive	2	10	(ton/ha)	2.66	(DH/kg)	532	4 192	84	448
Fodder from cereals	-	75	1 000	UF	2.58	UF	1 935	-	-	1 935
Total		175					20 962		4 118	16 844

Table XVIII.2.5: Revenu agricole prévu avec le projet (3/3)
(Economic Price, DH/ha)

Azghar - applied for AZ1

Crops		Benefit						Expenditure		Net Benefit (DH) g=d-f
		Occupancy (%) a	Yield		Unit price		Benefit (DH) d=a*b*c	Unit cost (DH/ha) e	Net cost (DH) f=e*a	
			Qty. b	Unit	(DH) c	Unit				
Cereals 1	Hard wheat	50	4.0	(ton/ha)	1.67	(DH/kg)	3 346	3 406	1 703	1 643
Cereals 2	Barley	10	4.0	(ton/ha)	1.12	(DH/kg)	448	3 388	339	109
Fodder 1	Barley	2.5	2 300	UF	2.58	UF	148	3 379	84	64
Fodder 2	Alfalfa	7.5	10 500	UF	4.47	UF	3 520	6 719	504	3 016
Legetable	Broad bean	5	15	(ton/ha)	3.21	(DH/kg)	2 406	10 496	525	1 881
Vegetable 1	Potato	10	31	(ton/ha)	2.63	(DH/kg)	8 159	17 182	1 718	6 441
Vegetable 2	Tomato	10	50	(ton/ha)	2.40	(DH/kg)	11 975	12 997	1 300	10 675
Tree crop	Olive	15	10	(ton/ha)	3.02	(DH/kg)	4 530	4 192	629	3 901
Fodder from cereals	-	50	1 000	UF	2.58	UF	1 290	-	-	1 290
Fodder from cereals 2	-	10	1 000	UF	2.58	UF	258	-	-	258
Total		170					36 080		6 802	29 278

Table XVIII.2.6 Avantage agricole annuel des plans alternatifs

Project	Alternative plans	Location within the Project	Annual average irrigable area (ha)	Benefit without Project		Benefit with Project		Incremental net benefit with Project (million DH)
				Unit benefit (DH/ha)	Total benefit (million DH)	Unit benefit (DH/ha)	Total benefit (million DH)	
a	b	c	d	e	f = d x e	g	h = d x g	i = h - f
N'fifikh (upstream)	NU1	Upstream	853	2 267	1.9	18 053	15.4	13.5
	NU2	Upstream	886	2 267	2.0	8 369	7.4	5.4
	NU3	Upstream	645	2 267	1.5	29 758	19.2	17.7
	NU4	Upstream	984	2 267	2.2	18 053	17.8	15.6
	NU5	Upstream	853	2 267	1.9	18 053	15.4	13.5
N'fifikh (downstream)	ND1	Downstream	228	2 181	0.5	16 114	3.7	3.2
	ND2	Downstream	510	2 181	1.1	16 114	8.2	7.1
Taskourt	TA1	Perennial irrigation area	900	12 420	11.2	22 330	20.1	8.9
		Seasonal & flood irri. area	2 931	138	0.4	22 330	65.4	65.0
		Total	3 831	-	11.6	-	85.5	73.9
	TA2	Perennial irrigation area	900	12 420	11.2	22 330	20.1	8.9
		Seasonal & flood irri. area	3 506	138	0.5	22 330	78.3	77.8
		Total	4 406	-	11.7	-	98.4	86.7
	TA3	Perennial irrigation area	900	12 420	11.2	22 330	20.1	8.9
		Seasonal & flood irri. area	1 813	138	0.3	22 330	40.5	40.2
		Total	2 713	-	11.5	-	60.6	49.1
	TA4	Perennial irrigation area	900	12 420	11.2	22 330	20.1	8.9
		Seasonal & flood irri. area	2 226	138	0.3	22 330	49.7	49.4
		Total	3 126	-	11.5	-	69.8	58.3
Timkit	TI1	Ifeg	240	7 710	1.9	27 260	6.5	4.6
		Tinejdad	1 173	8 876	10.4	25 554	30.0	19.6
		Chtam	277	2 752	0.8	16 844	4.7	3.9
		Total	1 690	-	13.1	-	41.2	28.1
	TI2	Ifeg	240	7 710	1.9	27 260	6.5	4.6
		Tinejdad	1 075	8 876	9.5	25 554	27.5	18.0
		Chtam	255	2 752	0.7	16 844	4.3	3.6
		Total	1 570	-	12.1	-	38.3	26.2
Azghar	AZ1	Whole area	2 000	165	0.3	29 278	58.6	58.3

Table XVIII.2.7 Coût Financier et économique des Projets (1/3)
(Unit: Million DH)

Cost Item	Foreign Currency Portion		Local Currency Portion		Total financial cost	Total economic cost
	Financial cost	Economic cost	Financial cost	Economic cost		
NU1 N'ffikh (Upstream)						
1. Construction cost						
1.1 Dam and appurtenant facilities	141.4	102.4	76.1	47.4	217.5	149.8
1.2 Irrigation facilities	27.7	20.1	27.6	17.2	55.3	37.3
2. Resettlement cost	0.0	0.0	4.1	3.1	4.1	3.1
3. Engineering services cost	13.1	9.0	7.0	4.8	20.1	13.8
4. Administration cost	0.0	0.0	13.8	9.5	13.8	9.5
Total of (1.- 4.)	182.2	131.5	128.6	82.0	310.8	213.5
NU2 N'ffikh (Upstream)						
1. Construction cost						
1.1 Dam and appurtenant facilities	141.4	102.4	76.1	47.4	217.5	149.8
1.2 Irrigation facilities	28.5	20.7	28.5	17.8	57.0	38.5
2. Resettlement cost	0.0	0.0	4.1	3.1	4.1	3.1
3. Engineering services cost	13.1	9.0	7.1	4.9	20.2	13.9
4. Administration cost	0.0	0.0	13.9	9.6	13.9	9.6
Total of (1.- 4.)	183.0	132.1	129.7	82.8	312.7	214.9
NU3 N'ffikh (Upstream)						
1. Construction cost						
1.1 Dam and appurtenant facilities	141.4	102.4	76.1	47.4	217.5	149.8
1.2 Irrigation facilities	27.7	20.1	27.6	17.2	55.3	37.3
2. Resettlement cost	0.0	0.0	4.1	3.1	4.1	3.1
3. Engineering services cost	13.1	9.0	7.0	4.8	20.1	13.8
4. Administration cost	0.0	0.0	13.8	9.5	13.8	9.5
Total of (1.- 4.)	182.2	131.5	128.6	82.0	310.8	213.5
NU4 N'ffikh (Upstream)						
1. Construction cost						
1.1 Dam and appurtenant facilities	141.4	102.4	76.1	47.4	217.5	149.8
1.2 Irrigation facilities	65.6	47.6	65.6	40.9	131.2	88.5
2. Resettlement cost	0.0	0.0	4.1	3.1	4.1	3.1
3. Engineering services cost	16.7	11.5	9.0	6.2	25.7	17.7
4. Administration cost	0.0	0.0	17.6	12.1	17.6	12.1
Total of (1.- 4.)	223.7	161.5	172.4	109.7	396.1	271.2
NU5 N'ffikh (Upstream)						
1. Construction cost						
1.1 Dam and appurtenant facilities	141.4	102.4	76.1	47.4	217.5	149.8
1.2 Irrigation facilities	28.0	20.3	28.0	17.5	56.0	37.8
2. Resettlement cost	0.0	0.0	4.1	3.1	4.1	3.1
3. Engineering services cost	13.1	9.0	7.1	4.9	20.2	13.9
4. Administration cost	0.0	0.0	13.9	9.5	13.9	9.5
Total of (1.- 4.)	182.5	131.7	129.2	82.4	311.7	214.1

Table XVIII.2.7 Coût Financier et économique des Projets (2/3)

(Unit: Million DH)

Cost Item	Foreign Currency Portion		Local Currency Portion		Total financial cost	Total economic cost
	Financial cost	Economic cost	Financial cost	Economic cost		
ND1 N'fifikh (Downstream)						
1. Construction cost						
1.1 Dam and appurtenant facilities	5.9	4.3	3.1	1.9	9.0	6.2
1.2 Irrigation facilities	22.0	15.9	21.9	13.7	43.9	29.6
2. Resettlement cost	0.0	0.0	0.0	0.0	0.0	0.0
3. Engineering services cost	2.5	1.7	1.4	1.0	3.9	2.7
4. Administration cost	0.0	0.0	2.6	1.8	2.6	1.8
Total of (1.- 4.)	30.4	21.9	29.0	18.4	59.4	40.3
ND2 N'fifikh (Downstream)						
1. Construction cost						
1.1 Dam and appurtenant facilities	35.9	26.0	19.4	12.1	55.3	38.1
1.2 Irrigation facilities	49.9	36.2	49.8	31.0	99.7	67.2
2. Resettlement cost	0.0	0.0	0.0	0.0	0.0	0.0
3. Engineering services cost	7.4	5.1	4.0	2.8	11.4	7.9
4. Administration cost	0.0	0.0	7.8	5.3	7.8	5.3
Total of (1.- 4.)	93.2	67.3	81.0	51.2	174.2	118.5
TA1 Taskourt						
1. Construction cost						
1.1 Dam and appurtenant facilities	453.0	342.8	243.9	158.7	696.9	501.5
1.2 Irrigation facilities	95.8	72.4	95.7	62.2	191.5	134.6
2. Resettlement cost	0.0	0.0	71.6	54.0	71.6	54.0
3. Engineering services cost	42.5	30.5	23.0	16.5	65.5	47.0
4. Administration cost	0.0	0.0	48.0	34.5	48.0	34.5
Total of (1.- 4.)	591.3	445.7	482.2	325.9	1 073.5	771.6
TA2 Taskourt						
1. Construction cost						
1.1 Dam and appurtenant facilities	453.0	342.8	243.9	158.7	696.9	501.5
1.2 Irrigation facilities	247.6	187.2	247.6	161.0	495.2	348.2
2. Resettlement cost	0.0	0.0	71.6	54.0	71.6	54.0
3. Engineering services cost	57.1	41.0	30.7	22.1	87.8	63.1
4. Administration cost	0.0	0.0	63.2	45.2	63.2	45.2
Total of (1.- 4.)	757.7	571.0	657.0	441.0	1 414.7	1 012.0
TA3 Taskourt						
1. Construction cost						
1.1 Dam and appurtenant facilities	260.2	196.9	140.1	91.2	400.3	288.1
1.2 Irrigation facilities	95.8	72.4	95.7	62.2	191.5	134.6
2. Resettlement cost	0.0	0.0	35.7	26.9	35.7	26.9
3. Engineering services cost	28.3	20.3	15.3	11.0	43.6	31.3
4. Administration cost	0.0	0.0	31.4	22.5	31.4	22.5
Total of (1.- 4.)	384.3	289.6	318.2	213.8	702.5	503.4
TA4 Taskourt						
1. Construction cost						
1.1 Dam and appurtenant facilities	260.2	196.9	140.1	91.2	400.3	288.1
1.2 Irrigation facilities	218.5	165.2	218.5	142.1	437.0	307.3
2. Resettlement cost	0.0	0.0	35.7	26.9	35.7	26.9
3. Engineering services cost	40.1	28.8	21.6	15.5	61.7	44.3
4. Administration cost	0.0	0.0	43.7	31.1	43.7	31.1
Total of (1.- 4.)	518.8	390.9	459.6	306.8	978.4	697.7

Table XVIII.2.2.7 Coût Financier et économique des Projets (3/3)
(Unit: Million DH)

Cost Item	Foreign Currency Portion		Local Currency Portion		Total financial cost	Total economic cost
	Financial cost	Economic cost	Financial cost	Economic cost		
TI1 Timkit						
1. Construction cost						
1.1 Dam and appurtenant facilities	153.4	116.1	82.6	53.7	236.0	169.8
1.2 Irrigation facilities	81.7	61.8	81.6	53.1	163.3	114.9
2. Resettlement cost	0.0	0.0	8.0	6.0	8.0	6.0
3. Engineering services cost	19.1	13.7	10.3	7.4	29.4	21.1
4. Administration cost	0.0	0.0	20.4	14.5	20.4	14.5
Total of (1.- 4.)	254.2	191.6	202.9	134.7	457.1	326.3
TI2 Timkit						
1. Construction cost						
1.1 Dam and appurtenant facilities	153.4	116.1	82.6	53.7	236.0	169.8
1.2 Irrigation facilities	81.7	61.8	81.6	53.1	163.3	114.9
2. Resettlement cost	0.0	0.0	8.0	6.0	8.0	6.0
3. Engineering services cost	19.1	13.7	10.3	7.4	29.4	21.1
4. Administration cost	0.0	0.0	20.4	14.5	20.4	14.5
Total of (1.- 4.)	254.2	191.6	202.9	134.7	457.1	326.3
AZ1 Azghar						
1. Construction cost						
1.1 Dam and appurtenant facilities	111.1	80.4	59.8	37.2	170.9	117.6
1.2 Irrigation facilities	55.6	40.3	55.6	34.7	111.2	75.0
2. Resettlement cost	0.0	0.0	6.4	4.8	6.4	4.8
3. Engineering services cost	13.5	9.3	7.3	5.0	20.8	14.3
4. Administration cost	0.0	0.0	14.4	9.9	14.4	9.9
Total of (1.- 4.)	180.2	130.0	143.5	91.6	323.7	221.6

Note: 1. Price level: as of April 2000, US\$1.0 = 10.68 DH, J. Yen100 = 9.90 DH

2. Engineering service fee is estimated as 7 % of total construction cost

3. Administration cost is estimated as 5 % of construction cost and resettlement cost.

4. Financial cost includes physical contingency, price contingency, and the Value Added Tax.

5. Economic cost does not include price contingency and the Value Added Tax.

Table XVIII.2.8 Dépression du coût annuel (1/3)
(Economic Price, million DH)

Cost Item	Year in Order					Total cost
	1st	2nd	3rd	4th	5th	
NU1 N'fifikh (Upstream)						
1. Construction cost						
1.1 Dam and appurtenant facilities	-	35.9	76.2	37.7	-	149.8
1.2 Irrigation facilities	-	7.5	18.7	11.1	-	37.3
2. Resettlement cost	1.6	1.5	-	-	-	3.1
3. Engineering services cost	-	4.7	4.6	4.5	-	13.8
4. Administration cost	0.1	2.2	4.7	2.5	-	9.5
Total of (1.- 4.)	1.7	51.8	104.2	55.8	-	213.5
NU2 N'fifikh (Upstream)						
1. Construction cost						
1.1 Dam and appurtenant facilities	-	35.9	76.2	37.7	-	149.8
1.2 Irrigation facilities	-	7.7	19.3	11.5	-	38.5
2. Resettlement cost	1.6	1.5	-	-	-	3.1
3. Engineering services cost	-	2.8	2.8	8.3	-	13.9
4. Administration cost	0.1	2.3	4.8	2.4	-	9.6
Total of (1.- 4.)	1.7	50.2	103.1	59.9	-	214.9
NU3 N'fifikh (Upstream)						
1. Construction cost						
1.1 Dam and appurtenant facilities	-	35.9	76.2	37.7	-	149.8
1.2 Irrigation facilities	-	7.5	18.7	11.1	-	37.3
2. Resettlement cost	1.6	1.5	-	-	-	3.1
3. Engineering services cost	-	4.7	4.6	4.5	-	13.8
4. Administration cost	0.1	2.2	4.7	2.5	-	9.5
Total of (1.- 4.)	1.7	51.8	104.2	55.8	-	213.5
NU4 N'fifikh (Upstream)						
1. Construction cost						
1.1 Dam and appurtenant facilities	-	35.9	76.2	37.7	-	149.8
1.2 Irrigation facilities	-	17.7	44.3	26.5	-	88.5
2. Resettlement cost	1.6	1.5	-	-	-	3.1
3. Engineering services cost	-	6.0	5.8	5.9	-	17.7
4. Administration cost	0.1	2.8	6.0	3.2	-	12.1
Total of (1.- 4.)	1.7	63.9	132.3	73.3	-	271.2
NU5 N'fifikh (Upstream)						
1. Construction cost						
1.1 Dam and appurtenant facilities	-	35.9	76.2	37.7	-	149.8
1.2 Irrigation facilities	-	7.6	18.9	11.3	-	37.8
2. Resettlement cost	1.6	1.5	-	-	-	3.1
3. Engineering services cost	-	4.7	4.6	4.6	-	13.9
4. Administration cost	0.1	2.3	4.8	2.3	-	9.5
Total of (1.- 4.)	1.7	52.0	104.5	55.9	-	214.1

Table XVIII.2.8 Dépression du coût annuel (2/3)
(Economic Price, million DH)

Cost Item	Year in Order					Total cost
	1st	2nd	3rd	4th	5th	
ND1 N'fikh (Downstream)						
1. Construction cost						
1.1 Dam and appurtenant facilities	-	1.5	3.1	1.6	-	6.2
1.2 Irrigation facilities	-	5.9	14.8	8.9	-	29.6
2. Resettlement cost	-	-	-	-	-	-
3. Engineering services cost	-	0.9	0.9	0.9	-	2.7
4. Administration cost	-	0.4	0.9	0.5	-	1.8
Total of (1.- 4.)	-	8.7	19.7	11.9	-	40.3
ND2 N'fikh (Downstream)						
1. Construction cost						
1.1 Dam and appurtenant facilities	-	9.1	19.4	9.6	-	38.1
1.2 Irrigation facilities	-	13.4	33.6	20.2	-	67.2
2. Resettlement cost	-	-	-	-	-	-
3. Engineering services cost	-	2.7	2.6	2.6	-	7.9
4. Administration cost	-	1.1	2.7	1.5	-	5.3
Total of (1.- 4.)	-	26.3	58.3	33.9	-	118.5
TA1 Taskourt						
1. Construction cost						
1.1 Dam and appurtenant facilities	-	54.7	118.5	164.1	164.2	501.5
1.2 Irrigation facilities	-	-	26.9	67.3	40.4	134.6
2. Resettlement cost	27.0	27.0	-	-	-	54.0
3. Engineering services cost	-	11.8	11.8	11.8	11.6	47.0
4. Administration cost	1.4	4.1	7.3	11.6	10.1	34.5
Total of (1.- 4.)	28.4	97.6	164.5	254.8	226.3	771.6
TA2 Taskourt						
1. Construction cost						
1.1 Dam and appurtenant facilities	-	54.7	118.5	164.1	164.2	501.5
1.2 Irrigation facilities	-	-	69.6	174.1	104.5	348.2
2. Resettlement cost	27.0	27.0	-	-	-	54.0
3. Engineering services cost	-	15.8	15.8	15.8	15.7	63.1
4. Administration cost	1.4	4.1	9.4	16.9	13.4	45.2
Total of (1.- 4.)	28.4	101.6	213.3	370.9	297.8	1 012.0
TA3 Taskourt						
1. Construction cost						
1.1 Dam and appurtenant facilities	-	31.4	68.1	94.3	94.3	288.1
1.2 Irrigation facilities	-	-	26.9	67.3	40.4	134.6
2. Resettlement cost	13.5	13.4	-	-	-	26.9
3. Engineering services cost	-	7.8	7.8	7.8	7.9	31.3
4. Administration cost	0.7	2.2	4.8	8.1	6.7	22.5
Total of (1.- 4.)	14.2	54.8	107.6	177.5	149.3	503.4
TA4 Taskourt						
1. Construction cost						
1.1 Dam and appurtenant facilities	-	31.4	68.1	94.3	94.3	288.1
1.2 Irrigation facilities	-	-	61.5	153.7	92.1	307.3
2. Resettlement cost	13.5	13.4	-	-	-	26.9
3. Engineering services cost	-	11.1	11.1	11.1	11.0	44.3
4. Administration cost	0.7	2.2	6.5	12.4	9.3	31.1
Total of (1.- 4.)	14.2	58.1	147.2	271.5	206.7	697.7

Table XVIII2.2.8 Dépression du coût annuel (3/3)
(Economic Price, million DH)

Cost Item	Year in Order					Total cost
	1st	2nd	3rd	4th	5th	
TI1 Timkit						
1. Construction cost						
1.1 Dam and appurtenant facilities	-	28.3	37.7	56.6	47.2	169.8
1.2 Irrigation facilities	-	-	23.0	57.5	34.4	114.9
2. Resettlement cost	3.0	3.0	-	-	-	6.0
3. Engineering services cost	-	5.3	5.3	5.3	5.2	21.1
4. Administration cost	0.2	1.6	3.0	5.7	4.0	14.5
Total of (1.- 4.)	3.2	38.2	69.0	125.1	90.8	326.3
TI2 Timkit						
1. Construction cost						
1.1 Dam and appurtenant facilities	-	28.3	37.7	56.6	47.2	169.8
1.2 Irrigation facilities	-	-	23.0	57.5	34.4	114.9
2. Resettlement cost	3.0	3.0	-	-	-	6.0
3. Engineering services cost	-	5.3	5.3	5.2	5.3	21.1
4. Administration cost	0.2	1.6	3.0	5.7	4.0	14.5
Total of (1.- 4.)	3.2	38.2	69.0	125.0	90.9	326.3
AZ1 Azghar						
1. Construction cost						
1.1 Dam and appurtenant facilities	-	28.6	44.5	44.5	-	117.6
1.2 Irrigation facilities	-	15.0	37.5	22.5	-	75.0
2. Resettlement cost	2.4	2.4	-	-	-	4.8
3. Engineering services cost	-	4.9	4.7	4.7	-	14.3
4. Administration cost	0.1	2.3	4.1	3.4	-	9.9
Total of (1.- 4.)	2.5	53.2	90.8	75.1	-	221.6

Table XVIII.2.9: Analyse du coût -Benefice des plans alternatifs d'irrigation (1/14)

NU1 N'fifikh (Upstream)		Unit: million DH															
Year in order	Year	Benefit				Total Benefit	Cost								Net Cash Flow		
		Agriculture	Water supply	Flood & erosion control	Other		Dam	Irrigation	Resettle-ment	Engr. services	Administra-tion	Sub-total	O/M	Replace-ment		Total Cost	
1	2001	0.0				0.0	0.0	0.0	1.6		0.1	1.7	0.0		1.7	-1.7	
2	2002	0.0				0.0	35.9	7.5	1.5	4.7	2.2	51.8	0.0		51.8	-51.8	
3	2003	0.0				0.0	76.2	18.7		4.6	4.7	104.2	0.0		104.2	-104.2	
4	2004	0.0				0.0	37.7	11.1		4.5	2.5	55.8	0.0		55.8	-55.8	
5	2005	7.6				7.6						0.0	1.5		1.5	6.1	
6	2006	9.9				9.9						0.0	1.5		1.5	8.4	
7	2007	12.8				12.8						0.0	1.5		1.5	11.3	
8	2008	13.4				13.4						0.0	1.5		1.5	11.9	
9	2009	13.5				13.5						0.0	1.5		1.5	12.0	
10	2010	13.5				13.5						0.0	1.5		1.5	12.0	
11	2011	13.5				13.5						0.0	1.5		1.5	12.0	
12	2012	13.5				13.5						0.0	1.5		1.5	12.0	
13	2013	13.5				13.5						0.0	1.5		1.5	12.0	
14	2014	13.5				13.5						0.0	1.5		1.5	12.0	
15	2015	13.5				13.5						0.0	1.5		1.5	12.0	
16	2016	13.5				13.5						0.0	1.5		1.5	12.0	
17	2017	13.5				13.5						0.0	1.5		1.5	12.0	
18	2018	13.5				13.5						0.0	1.5		1.5	12.0	
19	2019	13.5				13.5						0.0	1.5		1.5	12.0	
20	2020	13.5				13.5						0.0	1.5		1.5	12.0	
21	2021	13.5				13.5						0.0	1.5		1.5	12.0	
22	2022	13.5				13.5						0.0	1.5		1.5	12.0	
23	2023	13.5				13.5						0.0	1.5		1.5	12.0	
24	2024	13.5				13.5						0.0	1.5		1.5	12.0	
25	2025	13.5				13.5						0.0	1.5		1.5	12.0	
26	2026	13.5				13.5						0.0	1.5		1.5	12.0	
27	2027	13.5				13.5						0.0	1.5		1.5	12.0	
28	2028	13.5				13.5						0.0	1.5		1.5	12.0	
29	2029	13.5				13.5						0.0	1.5	11.2	12.7	0.8	
30	2030	13.5				13.5						0.0	1.5		1.5	12.0	
31	2031	13.5				13.5						0.0	1.5		1.5	12.0	
32	2032	13.5				13.5						0.0	1.5		1.5	12.0	
33	2033	13.5				13.5						0.0	1.5		1.5	12.0	
34	2034	13.5				13.5						0.0	1.5		1.5	12.0	
35	2035	13.5				13.5						0.0	1.5		1.5	12.0	
36	2036	13.5				13.5						0.0	1.5		1.5	12.0	
37	2037	13.5				13.5						0.0	1.5		1.5	12.0	
38	2038	13.5				13.5						0.0	1.5		1.5	12.0	
39	2039	13.5				13.5						0.0	1.5		1.5	12.0	
40	2040	13.5				13.5						0.0	1.5		1.5	12.0	
41	2041	13.5				13.5						0.0	1.5		1.5	12.0	
42	2042	13.5				13.5						0.0	1.5		1.5	12.0	
43	2043	13.5				13.5						0.0	1.5		1.5	12.0	
44	2044	13.5				13.5						0.0	1.5		1.5	12.0	
45	2045	13.5				13.5						0.0	1.5		1.5	12.0	
46	2046	13.5				13.5						0.0	1.5		1.5	12.0	
47	2047	13.5				13.5						0.0	1.5		1.5	12.0	
48	2048	13.5				13.5						0.0	1.5		1.5	12.0	
49	2049	13.5				13.5						0.0	1.5		1.5	12.0	
50	2050	13.5				13.5						0.0	1.5		1.5	12.0	
51	2051	13.5				13.5						0.0	1.5		1.5	12.0	
52	2052	13.5				13.5						0.0	1.5		1.5	12.0	
53	2053	13.5				13.5						0.0	1.5		1.5	12.0	
54	2054	13.5				13.5						0.0	1.5		1.5	12.0	
EIRR=		-4.5%															
B/C =		0.62 (at discount rate: 8%)															
NPV=		-69.8 (at discount rate: 8%)															
NPV=		-39.1 (at discount rate: 6%)															
NPV=		-86.3 (at discount rate: 10%)															
NPV=		-95.1 (at discount rate: 12%)															

Table XVIII.2.9: Analyse du coût -Benefice des plans alternatifs d'irrigation (2/14)

NU2 N'fifikh (Upstream)		Unit: million DH															
Year in order	Year	Benefit				Total Benefit	Cost								Net Cash Flow		
		Agriculture	Water supply	Flood & erosion control	Other		Dam	Irrigation	Resettle-ment	Engr. services	Administra-tion	Sub-total	O/M	Replace-ment		Total Cost	
1	2001	0.0				0.0	0.0	0.0	1.6		0.1	1.7	0.0		1.7	-1.7	
2	2002	0.0				0.0	35.9	7.7	1.5	2.8	2.2	50.1	0.0		50.1	-50.1	
3	2003	0.0				0.0	76.2	19.3		2.8	4.8	103.1	0.0		103.1	-103.1	
4	2004	0.0				0.0	37.7	11.5		8.3	2.5	60.0	0.0		60.0	-60.0	
5	2005	2.9				2.9						0.0	1.5		1.5	1.4	
6	2006	3.7				3.7						0.0	1.5		1.5	2.2	
7	2007	4.7				4.7						0.0	1.5		1.5	3.2	
8	2008	5.2				5.2						0.0	1.5		1.5	3.7	
9	2009	5.4				5.4						0.0	1.5		1.5	3.9	
10	2010	5.4				5.4						0.0	1.5		1.5	3.9	
11	2011	5.4				5.4						0.0	1.5		1.5	3.9	
12	2012	5.4				5.4						0.0	1.5		1.5	3.9	
13	2013	5.4				5.4						0.0	1.5		1.5	3.9	
14	2014	5.4				5.4						0.0	1.5		1.5	3.9	
15	2015	5.4				5.4						0.0	1.5		1.5	3.9	
16	2016	5.4				5.4						0.0	1.5		1.5	3.9	
17	2017	5.4				5.4						0.0	1.5		1.5	3.9	
18	2018	5.4				5.4						0.0	1.5		1.5	3.9	
19	2019	5.4				5.4						0.0	1.5		1.5	3.9	
20	2020	5.4				5.4						0.0	1.5		1.5	3.9	
21	2021	5.4				5.4						0.0	1.5		1.5	3.9	
22	2022	5.4				5.4						0.0	1.5		1.5	3.9	
23	2023	5.4				5.4						0.0	1.5		1.5	3.9	
24	2024	5.4				5.4						0.0	1.5		1.5	3.9	
25	2025	5.4				5.4						0.0	1.5		1.5	3.9	
26	2026	5.4				5.4						0.0	1.5		1.5	3.9	
27	2027	5.4				5.4						0.0	1.5		1.5	3.9	
28	2028	5.4				5.4						0.0	1.5		1.5	3.9	
29	2029	5.4				5.4						0.0	1.5	11.3	12.9	-7.5	
30	2030	5.4				5.4						0.0	1.5		1.5	3.9	
31	2031	5.4				5.4						0.0	1.5		1.5	3.9	
32	2032	5.4				5.4						0.0	1.5		1.5	3.9	
33	2033	5.4				5.4						0.0	1.5		1.5	3.9	
34	2034	5.4				5.4						0.0	1.5		1.5	3.9	
35	2035	5.4				5.4						0.0	1.5		1.5	3.9	
36	2036	5.4				5.4						0.0	1.5		1.5	3.9	
37	2037	5.4				5.4						0.0	1.5		1.5	3.9	
38	2038	5.4				5.4						0.0	1.5		1.5	3.9	
39	2039	5.4				5.4						0.0	1.5		1.5	3.9	
40	2040	5.4				5.4						0.0	1.5		1.5	3.9	
41	2041	5.4				5.4						0.0	1.5		1.5	3.9	
42	2042	5.4				5.4						0.0	1.5		1.5	3.9	
43	2043	5.4				5.4						0.0	1.5		1.5	3.9	
44	2044	5.4				5.4						0.0	1.5		1.5	3.9	
45	2045	5.4				5.4						0.0	1.5		1.5	3.9	
46	2046	5.4				5.4						0.0	1.5		1.5	3.9	
47	2047	5.4				5.4						0.0	1.5		1.5	3.9	
48	2048	5.4				5.4						0.0	1.5		1.5	3.9	
49	2049	5.4				5.4						0.0	1.5		1.5	3.9	
50	2050	5.4				5.4						0.0	1.5		1.5	3.9	
51	2051	5.4				5.4						0.0	1.5		1.5	3.9	
52	2052	5.4				5.4						0.0	1.5		1.5	3.9	
53	2053	5.4			</												

Table XVIII.2.9: Analyse du coût -Benefice des plans alternatifs d'irrigation (3/14)

NU3 N'fifikh (Upstream)		Unit: million DH													
Year in order	Year	Benefit				Total Benefit	Cost							Net Cash Flow	
		Agriculture	Water supply	Flood & erosion control	Other		Dam	Irrigation	Investment	O/M	Replacement	Total Cost			
								Resettle-ment	Engr-services	Administra-tion	Sub-total				
1	2001	0.0			0.0	0.0	0.0	1.6		0.1	1.7	0.0		1.7	-1.7
2	2002	0.0			0.0	35.9	7.5		4.7	2.2	51.8	0.0		51.8	-51.8
3	2003	0.0			0.0	76.2	18.7		4.6	4.7	104.2	0.0		104.2	-104.2
4	2004	0.0			0.0	37.7	11.1		4.5	2.5	55.8	0.0		55.8	-55.8
5	2005	8.5			8.5						0.0	1.5		1.5	7.0
6	2006	11.5			11.5						0.0	1.5		1.5	10.0
7	2007	14.3			14.3						0.0	1.5		1.5	12.8
8	2008	14.3			14.3						0.0	1.5		1.5	12.8
9	2009	15.4			15.4						0.0	1.5		1.5	13.9
10	2010	15.6			15.6						0.0	1.5		1.5	14.1
11	2011	16.6			16.6						0.0	1.5		1.5	15.1
12	2012	17.7			17.7						0.0	1.5		1.5	16.2
13	2013	17.7			17.7						0.0	1.5		1.5	16.2
14	2014	17.7			17.7						0.0	1.5		1.5	16.2
15	2015	17.7			17.7						0.0	1.5		1.5	16.2
16	2016	17.7			17.7						0.0	1.5		1.5	16.2
17	2017	17.7			17.7						0.0	1.5		1.5	16.2
18	2018	17.7			17.7						0.0	1.5		1.5	16.2
19	2019	17.7			17.7						0.0	1.5		1.5	16.2
20	2020	17.7			17.7						0.0	1.5		1.5	16.2
21	2021	17.7			17.7						0.0	1.5		1.5	16.2
22	2022	17.7			17.7						0.0	1.5		1.5	16.2
23	2023	17.7			17.7						0.0	1.5		1.5	16.2
24	2024	17.7			17.7						0.0	1.5		1.5	16.2
25	2025	17.7			17.7						0.0	1.5		1.5	16.2
26	2026	17.7			17.7						0.0	1.5		1.5	16.2
27	2027	17.7			17.7						0.0	1.5		1.5	16.2
28	2028	17.7			17.7						0.0	1.5		1.5	16.2
29	2029	17.7			17.7						0.0	1.5	11.2	12.7	5.0
30	2030	17.7			17.7						0.0	1.5		1.5	16.2
31	2031	17.7			17.7						0.0	1.5		1.5	16.2
32	2032	17.7			17.7						0.0	1.5		1.5	16.2
33	2033	17.7			17.7						0.0	1.5		1.5	16.2
34	2034	17.7			17.7						0.0	1.5		1.5	16.2
35	2035	17.7			17.7						0.0	1.5		1.5	16.2
36	2036	17.7			17.7						0.0	1.5		1.5	16.2
37	2037	17.7			17.7						0.0	1.5		1.5	16.2
38	2038	17.7			17.7						0.0	1.5		1.5	16.2
39	2039	17.7			17.7						0.0	1.5		1.5	16.2
40	2040	17.7			17.7						0.0	1.5		1.5	16.2
41	2041	17.7			17.7						0.0	1.5		1.5	16.2
42	2042	17.7			17.7						0.0	1.5		1.5	16.2
43	2043	17.7			17.7						0.0	1.5		1.5	16.2
44	2044	17.7			17.7						0.0	1.5		1.5	16.2
45	2045	17.7			17.7						0.0	1.5		1.5	16.2
46	2046	17.7			17.7						0.0	1.5		1.5	16.2
47	2047	17.7			17.7						0.0	1.5		1.5	16.2
48	2048	17.7			17.7						0.0	1.5		1.5	16.2
49	2049	17.7			17.7						0.0	1.5		1.5	16.2
50	2050	17.7			17.7						0.0	1.5		1.5	16.2
51	2051	17.7			17.7						0.0	1.5		1.5	16.2
52	2052	17.7			17.7						0.0	1.5		1.5	16.2
53	2053	17.7			17.7						0.0	1.5		1.5	16.2
54	2054	17.7			17.7						0.0	1.5		1.5	16.2
EIRR=		6.1%													
B.C =		0.77 (at discount rate: 8%)													
NPV=		-41.7 (at discount rate: 8%)													
NPV=		2.2 (at discount rate: 6%)													
NPV=		-66.4 (at discount rate: 10%)													
NPV=		-80.4 (at discount rate: 12%)													

Table XVIII.2.9: Analyse du coût -Benefice des plans alternatifs d'irrigation (4/14)

NU4 N'fifikh (Upstream)		Unit: million DH													
Year in order	Year	Benefit				Total Benefit	Cost							Net Cash Flow	
		Agriculture	Water supply	Flood & erosion control	Other		Dam	Irrigation	Investment	O/M	Replacement	Total Cost			
								Resettle-ment	Engr-services	Administra-tion	Sub-total				
1	2001	0.0			0.0	0.0	0.0	1.6		0.1	1.7	0.0		1.7	-1.7
2	2002	0.0			0.0	35.9	17.7		6.0	2.7	63.8	0.0		63.8	-63.8
3	2003	0.0			0.0	76.2	44.3		5.8	6.0	132.3	0.0		132.3	-132.3
4	2004	0.0			0.0	37.7	26.5		5.9	3.3	73.4	0.0		73.4	-73.4
5	2005	7.8			7.8						0.0	2.5		2.5	5.3
6	2006	9.7			9.7						0.0	2.5		2.5	7.2
7	2007	14.7			14.7						0.0	2.5		2.5	12.1
8	2008	15.6			15.6						0.0	2.5		2.5	13.1
9	2009	15.6			15.6						0.0	2.5		2.5	13.1
10	2010	15.6			15.6						0.0	2.5		2.5	13.1
11	2011	15.6			15.6						0.0	2.5		2.5	13.1
12	2012	15.6			15.6						0.0	2.5		2.5	13.1
13	2013	15.6			15.6						0.0	2.5		2.5	13.1
14	2014	15.6			15.6						0.0	2.5		2.5	13.1
15	2015	15.6			15.6						0.0	2.5		2.5	13.1
16	2016	15.6			15.6						0.0	2.5		2.5	13.1
17	2017	15.6			15.6						0.0	2.5		2.5	13.1
18	2018	15.6			15.6						0.0	2.5		2.5	13.1
19	2019	15.6			15.6						0.0	2.5		2.5	13.1
20	2020	15.6			15.6						0.0	2.5		2.5	13.1
21	2021	15.6			15.6						0.0	2.5		2.5	13.1
22	2022	15.6			15.6						0.0	2.5		2.5	13.1
23	2023	15.6			15.6						0.0	2.5		2.5	13.1
24	2024	15.6			15.6						0.0	2.5		2.5	13.1
25	2025	15.6			15.6						0.0	2.5		2.5	13.1
26	2026	15.6			15.6						0.0	2.5		2.5	13.1
27	2027	15.6			15.6						0.0	2.5		2.5	13.1
28	2028	15.6			15.6						0.0	2.5		2.5	13.1
29	2029	15.6			15.6						0.0	2.5	16.3	18.9	-3.3
30	2030	15.6			15.6						0.0	2.5		2.5	13.1
31	2031	15.6			15.6						0.0	2.5		2.5	13.1
32	2032	15.6			15.6						0.0	2.5		2.5	13.1
33	2033	15.6			15.6						0.0	2.5		2.5	13.1
34	2034	15.6			15.6						0.0	2.5		2.5	13.1
35	2035	15.6			15.6						0.0	2.5		2.5	13.1
36	2036	15.6			15.6						0.0	2.5		2.5	13.1
37	2037	15.6			15.6						0.0	2.5		2.5	13.1
38	2038	15.6			15.6						0.0	2.5		2.5	13.1
39	2039	15.6			15.6						0.0	2.5		2.5	13.1
40	2040	15.6			15.6						0.0	2.5		2.5	13.1
41	2041	15.6			15.6						0.0	2.5		2.5	13.1
42	2042	15.6			15.6						0.0	2.5		2.5	13.1
43	2043	15.6			15.6						0.0	2.5		2.5	13.1
44	2044	15.6			15.6						0.0	2.5		2.5	13.1
45	2045	15.6			15.6						0.0	2.5		2.5	13.1
46	2046	15.6			15.6						0.0	2.5		2.5	13.1
47	2047	15.6			15.6						0.0	2.5		2.5	13.1
48	2048	15.6			15.6						0.0	2.5		2.5	13.1
49	2049	15.6			15.6						0.0	2.5		2.5	13.1
50	2050	15.6			15.6						0.0	2.5		2.5	13.1
51	2051	15.6			15.6						0.0	2.5		2.5	13.1
52	2052	15.6			15.6						0.0	2.5		2.5	13.1
53	2053	15.6			15.6						0.0	2.5		2.5	13.1
54	2														

Table XVIII.2.9: Analyse du coût -Benefice des plans alternatifs d'irrigation (5/14)

NU5 N'fikh (Upstream)		Unit: million DH														
Year in order	Year	Benefit				Total Benefit	Cost								Net Cash Flow	
		Agriculture	Water supply	Flood & erosion control	Other		Dam	Irrigation	Resettle-ment	Engr. services	Administra-tion	Sub-total	O/M	Replace-ment		Total Cost
1	2001	0.0				0.0	0.0	0.0	1.6		0.1	1.7	0.0		1.7	-1.7
2	2002	0.0				0.0	35.9	7.6	1.5	4.7	2.2	51.9	0.0		51.9	-51.9
3	2003	0.0				0.0	76.2	18.9		4.6	4.8	104.5	0.0		104.5	-104.5
4	2004	0.0				0.0	37.7	11.3		4.6	2.4	56.0	0.0		56.0	-56.0
5	2005	6.8				6.8						0.0	2.6		2.6	4.2
6	2006	8.4				8.4						0.0	2.6		2.6	5.8
7	2007	12.7				12.7						0.0	2.6		2.6	10.1
8	2008	13.5				13.5						0.0	2.6		2.6	10.9
9	2009	13.5				13.5						0.0	2.6		2.6	10.9
10	2010	13.5				13.5						0.0	2.6		2.6	10.9
11	2011	13.5				13.5						0.0	2.6		2.6	10.9
12	2012	13.5				13.5						0.0	2.6		2.6	10.9
13	2013	13.5				13.5						0.0	2.6		2.6	10.9
14	2014	13.5				13.5						0.0	2.6		2.6	10.9
15	2015	13.5				13.5						0.0	2.6		2.6	10.9
16	2016	13.5				13.5						0.0	2.6		2.6	10.9
17	2017	13.5				13.5						0.0	2.6		2.6	10.9
18	2018	13.5				13.5						0.0	2.6		2.6	10.9
19	2019	13.5				13.5						0.0	2.6		2.6	10.9
20	2020	13.5				13.5						0.0	2.6		2.6	10.9
21	2021	13.5				13.5						0.0	2.6		2.6	10.9
22	2022	13.5				13.5						0.0	2.6		2.6	10.9
23	2023	13.5				13.5						0.0	2.6		2.6	10.9
24	2024	13.5				13.5						0.0	2.6		2.6	10.9
25	2025	13.5				13.5						0.0	2.6		2.6	10.9
26	2026	13.5				13.5						0.0	2.6		2.6	10.9
27	2027	13.5				13.5						0.0	2.6		2.6	10.9
28	2028	13.5				13.5						0.0	2.6		2.6	10.9
29	2029	13.5				13.5						0.0	2.6	11.3	13.8	-0.3
30	2030	13.5				13.5						0.0	2.6		2.6	10.9
31	2031	13.5				13.5						0.0	2.6		2.6	10.9
32	2032	13.5				13.5						0.0	2.6		2.6	10.9
33	2033	13.5				13.5						0.0	2.6		2.6	10.9
34	2034	13.5				13.5						0.0	2.6		2.6	10.9
35	2035	13.5				13.5						0.0	2.6		2.6	10.9
36	2036	13.5				13.5						0.0	2.6		2.6	10.9
37	2037	13.5				13.5						0.0	2.6		2.6	10.9
38	2038	13.5				13.5						0.0	2.6		2.6	10.9
39	2039	13.5				13.5						0.0	2.6		2.6	10.9
40	2040	13.5				13.5						0.0	2.6		2.6	10.9
41	2041	13.5				13.5						0.0	2.6		2.6	10.9
42	2042	13.5				13.5						0.0	2.6		2.6	10.9
43	2043	13.5				13.5						0.0	2.6		2.6	10.9
44	2044	13.5				13.5						0.0	2.6		2.6	10.9
45	2045	13.5				13.5						0.0	2.6		2.6	10.9
46	2046	13.5				13.5						0.0	2.6		2.6	10.9
47	2047	13.5				13.5						0.0	2.6		2.6	10.9
48	2048	13.5				13.5						0.0	2.6		2.6	10.9
49	2049	13.5				13.5						0.0	2.6		2.6	10.9
50	2050	13.5				13.5						0.0	2.6		2.6	10.9
51	2051	13.5				13.5						0.0	2.6		2.6	10.9
52	2052	13.5				13.5						0.0	2.6		2.6	10.9
53	2053	13.5				13.5						0.0	2.6		2.6	10.9
54	2054	13.5				13.5						0.0	2.6		2.6	10.9
EIRR=		3.9%														
B/C =		0.58 (at discount rate: 8%)														
NPV=		-81.3 (at discount rate: 8%)														
NPV=		-54.5 (at discount rate: 6%)														
NPV=		-95.3 (at discount rate: 10%)														
NPV=		-102.3 (at discount rate: 12%)														

Table XVIII.2.9: Analyse du coût -Benefice des plans alternatifs d'irrigation (6/14)

ND1 N'fikh (Downstream)		Unit: million DH														
Year in order	Year	Benefit				Total Benefit	Cost								Net Cash Flow	
		Agriculture	Water supply	Flood & erosion control	Other		Dam	Irrigation	Resettle-ment	Engr. services	Administra-tion	Sub-total	O/M	Replace-ment		Total Cost
1	2001	0.0				0.0	0.0	0.0							0.0	0.0
2	2002	0.0				0.0	1.5	5.9		0.9	0.4	8.7	0.0		8.7	-8.7
3	2003	0.0				0.0	3.1	14.8		0.9	0.9	19.7	0.0		19.7	-19.7
4	2004	0.0				0.0	1.6	8.9		0.9	0.5	11.9	0.0		11.9	-11.9
5	2005	0.6				0.6						0.0	0.8		0.8	-0.2
6	2006	1.7				1.7						0.0	0.8		0.8	0.9
7	2007	2.4				2.4						0.0	0.8		0.8	1.6
8	2008	3.0				3.0						0.0	0.8		0.8	2.2
9	2009	3.2				3.2						0.0	0.8		0.8	2.4
10	2010	3.2				3.2						0.0	0.8		0.8	2.4
11	2011	3.2				3.2						0.0	0.8		0.8	2.4
12	2012	3.2				3.2						0.0	0.8		0.8	2.4
13	2013	3.2				3.2						0.0	0.8		0.8	2.4
14	2014	3.2				3.2						0.0	0.8		0.8	2.4
15	2015	3.2				3.2						0.0	0.8		0.8	2.4
16	2016	3.2				3.2						0.0	0.8		0.8	2.4
17	2017	3.2				3.2						0.0	0.8		0.8	2.4
18	2018	3.2				3.2						0.0	0.8		0.8	2.4
19	2019	3.2				3.2						0.0	0.8		0.8	2.4
20	2020	3.2				3.2						0.0	0.8		0.8	2.4
21	2021	3.2				3.2						0.0	0.8		0.8	2.4
22	2022	3.2				3.2						0.0	0.8		0.8	2.4
23	2023	3.2				3.2						0.0	0.8		0.8	2.4
24	2024	3.2				3.2						0.0	0.8		0.8	2.4
25	2025	3.2				3.2						0.0	0.8		0.8	2.4
26	2026	3.2				3.2						0.0	0.8		0.8	2.4
27	2027	3.2				3.2						0.0	0.8		0.8	2.4
28	2028	3.2				3.2						0.0	0.8		0.8	2.4
29	2029	3.2				3.2						0.0	0.8	3.3	4.1	-0.9
30	2030	3.2				3.2						0.0	0.8		0.8	2.4
31	2031	3.2				3.2						0.0	0.8		0.8	2.4
32	2032	3.2				3.2						0.0	0.8		0.8	2.4
33	2033	3.2				3.2						0.0	0.8		0.8	2.4
34	2034	3.2				3.2						0.0	0.8		0.8	2.4
35	2035	3.2				3.2						0.0	0.8		0.8	2.4
36	2036	3.2				3.2						0.0	0.8		0.8	2.4
37	2037	3.2				3.2						0.0	0.8		0.8	2.4
38	2038	3.2				3.2						0.0	0.8		0.8	2.4
39	2039	3.2				3.2						0.0	0.8		0.8	2.4
40	2040	3.2				3.2						0.0	0.8		0.8	2.4
41	2041	3.2				3.2						0.0	0.8		0.8	2.4
42	2042	3.2				3.2						0.0	0.8		0.8	2.4
43	2043	3.2				3.2						0.0	0.8		0.8	2.4
44	2044	3.2				3.2						0.0	0.8		0.8	2.4
45	2045	3.2				3.2						0.0	0.8		0.8	2.4
46	2046	3.2				3.2						0.0	0.8		0.8	2.4
47	2047	3.2				3.2						0.0	0.8		0.8	2.4
48	2048	3.2				3.2						0.0	0.8		0.8	2.4
49	2049	3.2				3.2						0.0	0.8		0.8	2.4
50	2050	3.2				3.2						0.0	0.8		0.8	2.4
51	2051	3.2				3.2						0.0	0.8		0.8	2.4
52	2052	3.2				3.2						0.0	0.8		0.8	2.4
53	2053	3.2				3.2						0.				

Table XVIII.2.9: Analyse du coût -Benefice des plans alternatifs d'irrigation (7/14)

ND2 N'fifikh (Downstream)														Unit: million DH									
Year in order	Year	Benefit				Total Benefit	Cost							O/M	Replacement	Total Cost	Net Cash Flow						
		Agriculture	Water supply	Flood & erosion control	Other		Dam	Irrigation	Resettle-ment	Engr. services	Administra-tion	Sub-total											
1	2001	0.0				0.0	0.0	0.0						0.0	0.0	0.0	0.0						
2	2002	0.0				0.0	9.1	13.4			1.1	26.3	0.0		26.3	-26.3							
3	2003	0.0				0.0	19.4	33.6			2.7	58.3	0.0		58.3	-58.3							
4	2004	0.0				0.0	9.6	20.2			2.6	33.9	0.0		33.9	-33.9							
5	2005	1.3				1.3						0.0	1.9		1.9	-0.6							
6	2006	3.7				3.7						0.0	1.9		1.9	1.8							
7	2007	5.3				5.3						0.0	1.9		1.9	3.3							
8	2008	6.7				6.7						0.0	1.9		1.9	4.7							
9	2009	7.1				7.1						0.0	1.9		1.9	5.2							
10	2010	7.1				7.1						0.0	1.9		1.9	5.2							
11	2011	7.1				7.1						0.0	1.9		1.9	5.2							
12	2012	7.1				7.1						0.0	1.9		1.9	5.2							
13	2013	7.1				7.1						0.0	1.9		1.9	5.2							
14	2014	7.1				7.1						0.0	1.9		1.9	5.2							
15	2015	7.1				7.1						0.0	1.9		1.9	5.2							
16	2016	7.1				7.1						0.0	1.9		1.9	5.2							
17	2017	7.1				7.1						0.0	1.9		1.9	5.2							
18	2018	7.1				7.1						0.0	1.9		1.9	5.2							
19	2019	7.1				7.1						0.0	1.9		1.9	5.2							
20	2020	7.1				7.1						0.0	1.9		1.9	5.2							
21	2021	7.1				7.1						0.0	1.9		1.9	5.2							
22	2022	7.1				7.1						0.0	1.9		1.9	5.2							
23	2023	7.1				7.1						0.0	1.9		1.9	5.2							
24	2024	7.1				7.1						0.0	1.9		1.9	5.2							
25	2025	7.1				7.1						0.0	1.9		1.9	5.2							
26	2026	7.1				7.1						0.0	1.9		1.9	5.2							
27	2027	7.1				7.1						0.0	1.9		1.9	5.2							
28	2028	7.1				7.1						0.0	1.9		1.9	5.2							
29	2029	7.1				7.1						0.0	1.9	8.6	10.5	-3.4							
30	2030	7.1				7.1						0.0	1.9		1.9	5.2							
31	2031	7.1				7.1						0.0	1.9		1.9	5.2							
32	2032	7.1				7.1						0.0	1.9		1.9	5.2							
33	2033	7.1				7.1						0.0	1.9		1.9	5.2							
34	2034	7.1				7.1						0.0	1.9		1.9	5.2							
35	2035	7.1				7.1						0.0	1.9		1.9	5.2							
36	2036	7.1				7.1						0.0	1.9		1.9	5.2							
37	2037	7.1				7.1						0.0	1.9		1.9	5.2							
38	2038	7.1				7.1						0.0	1.9		1.9	5.2							
39	2039	7.1				7.1						0.0	1.9		1.9	5.2							
40	2040	7.1				7.1						0.0	1.9		1.9	5.2							
41	2041	7.1				7.1						0.0	1.9		1.9	5.2							
42	2042	7.1				7.1						0.0	1.9		1.9	5.2							
43	2043	7.1				7.1						0.0	1.9		1.9	5.2							
44	2044	7.1				7.1						0.0	1.9		1.9	5.2							
45	2045	7.1				7.1						0.0	1.9		1.9	5.2							
46	2046	7.1				7.1						0.0	1.9		1.9	5.2							
47	2047	7.1				7.1						0.0	1.9		1.9	5.2							
48	2048	7.1				7.1						0.0	1.9		1.9	5.2							
49	2049	7.1				7.1						0.0	1.9		1.9	5.2							
50	2050	7.1				7.1						0.0	1.9		1.9	5.2							
51	2051	7.1				7.1						0.0	1.9		1.9	5.2							
52	2052	7.1				7.1						0.0	1.9		1.9	5.2							
53	2053	7.1				7.1						0.0	1.9		1.9	5.2							
54	2054	7.1				7.1						0.0	1.9		1.9	5.2							
55	2055	7.1				7.1						0.0	1.9		1.9	5.2							

EIRR = 2.9%
 B/C = 0.50 (at discount rate: 8%)
 NPV = -55.5 (at discount rate: 8%)
 NPV = -44.4 (at discount rate: 6%)
 NPV = -60.8 (at discount rate: 10%)
 NPV = -63.0 (at discount rate: 12%)

Table XVIII.2.9: Analyse du coût -Benefice des plans alternatifs d'irrigation (8/14)

TA1 Taskourt														Unit: million DH									
Year in order	Year	Benefit				Total Benefit	Cost							O/M	Replacement	Total Cost	Net Cash Flow						
		Agriculture	Water supply	Flood & erosion control	Other		Dam	Irrigation	Resettle-ment	Engr. services	Administra-tion	Sub-total											
1	2001	0.0				0.0	0.0	0.0						0.0	0.0	0.0	0.0						
2	2002	0.0				0.0	54.7	0.0				27.0	11.8	4.1	97.6	0.0	97.6						
3	2003	0.0				0.0	118.5	26.9				11.8	7.3	164.5	0.0	164.5	-164.5						
4	2004	0.0				0.0	164.1	67.3				11.8	11.6	254.8	0.0	254.8	-254.8						
5	2005	0.0				0.0	164.2	40.4				11.6	10.1	226.3	0.0	226.3	-226.3						
6	2006	38.0				38.0							0.0	5.2	5.2	32.8							
7	2007	51.5				51.5							0.0	5.2	5.2	46.3							
8	2008	60.7				60.7							0.0	5.2	5.2	55.5							
9	2009	68.5				68.5							0.0	5.2	5.2	63.3							
10	2010	73.9				73.9							0.0	5.2	5.2	68.7							
11	2011	73.9				73.9							0.0	5.2	5.2	68.7							
12	2012	73.9				73.9							0.0	5.2	5.2	68.7							
13	2013	73.9				73.9							0.0	5.2	5.2	68.7							
14	2014	73.9				73.9							0.0	5.2	5.2	68.7							
15	2015	73.9				73.9							0.0	5.2	5.2	68.7							
16	2016	73.9				73.9							0.0	5.2	5.2	68.7							
17	2017	73.9				73.9							0.0	5.2	5.2	68.7							
18	2018	73.9				73.9							0.0	5.2	5.2	68.7							
19	2019	73.9				73.9							0.0	5.2	5.2	68.7							
20	2020	73.9				73.9							0.0	5.2	5.2	68.7							
21	2021	73.9				73.9							0.0	5.2	5.2	68.7							
22	2022	73.9				73.9							0.0	5.2	5.2	68.7							
23	2023	73.9				73.9							0.0	5.2	5.2	68.7							
24	2024	73.9				73.9							0.0	5.2	5.2	68.7							
25	2025	73.9				73.9							0.0	5.2	5.2	68.7							
26	2026	73.9				73.9							0.0	5.2	5.2	68.7							
27	2027	73.9				73.9							0.0	5.2	5.2	68.7							
28	2028	73.9				73.9							0.0	5.2	5.2	68.7							
29	2029	73.9				73.9							0.0	5.2	5.2	68.7							
30	2030	73.9				73.9							0.0	5.2	5.2	68.7							
31	2031	73.9				73.9							0.0	5.2	5.2	68.7							
32	2032	73.9				73.9							0.0	5.2	5.2	68.7							
33	2033	73.9				73.9							0.0	5.2	5.2	68.7							
34	2034	73.9				73.9							0.0	5.2	5.2	68.7							
35	2035	73.9				73.9							0.0	5.2	5.2	68.7							
36	2036	73.9				73.9							0.0	5.2	5.2	68.7							
37	2037	73.9				73.9							0.0	5.2	5.2	68.7							
38	2038	73.9				73.9							0.0	5.2	5.2	68.7							
39	2039	73.9				73.9							0.0	5.2	5.2	68.7							
40	2040	73.9				73.9							0.0	5.2	5.2	68.7							
41	2041	73.9				73.9							0.0	5.2	5.2	68.7							
42	2042	73.9				73.9							0.0	5.2	5.2	68.7							
43	2043	73.9				73.9							0.0	5.2	5.2	68.7							
44	2044	73.9				73.9							0.0	5.2	5.2	68.7							
45	2045	73.9				73.9							0.0	5.2	5.2	68.7							
46	2046	73.9				73.9							0.0	5.2	5.2	68.7							
47	2047	73.9				73.9							0.0	5.2	5.2	68.7							
48	2048	73.9				73.9							0.0	5.2									

Table XVIII.2.9: Analyse du coût -Benefice des plans alternatifs d'irrigation (9/14)

TA2 Taskourt		Unit: million DH														
Year in order	Year	Benefit				Total Benefit	Cost						O/M	Replacement	Total Cost	Net Cash Flow
		Agriculture	Water supply	Flood & erosion control	Other		Dam	Irrigation	Resettle-ment	Engr. services	Administra-tion	Sub-total				
1	2001	0.0				0.0	0.0	0.0	27.0	1.3	28.3	0.0		28.3	-28.3	
2	2002	0.0				0.0	54.7	0.0			101.6	0.0		101.6	-101.6	
3	2003	0.0				0.0	118.5	69.6			15.8	9.4	213.3	213.3	-213.3	
4	2004	0.0				0.0	164.1	174.1			15.8	16.9	370.9	370.9	-370.9	
5	2005	0.0				0.0	164.2	104.5			15.7	13.4	297.8	297.8	-297.8	
6	2006	44.3				44.3					0.0	9.5	9.5	34.8		
7	2007	60.2				60.2					0.0	9.5	9.5	50.7		
8	2008	71.1				71.1					0.0	9.5	9.5	61.6		
9	2009	80.3				80.3					0.0	9.5	9.5	70.8		
10	2010	86.7				86.7					0.0	9.5	9.5	77.2		
11	2011	86.7				86.7					0.0	9.5	9.5	77.2		
12	2012	86.7				86.7					0.0	9.5	9.5	77.2		
13	2013	86.7				86.7					0.0	9.5	9.5	77.2		
14	2014	86.7				86.7					0.0	9.5	9.5	77.2		
15	2015	86.7				86.7					0.0	9.5	9.5	77.2		
16	2016	86.7				86.7					0.0	9.5	9.5	77.2		
17	2017	86.7				86.7					0.0	9.5	9.5	77.2		
18	2018	86.7				86.7					0.0	9.5	9.5	77.2		
19	2019	86.7				86.7					0.0	9.5	9.5	77.2		
20	2020	86.7				86.7					0.0	9.5	9.5	77.2		
21	2021	86.7				86.7					0.0	9.5	9.5	77.2		
22	2022	86.7				86.7					0.0	9.5	9.5	77.2		
23	2023	86.7				86.7					0.0	9.5	9.5	77.2		
24	2024	86.7				86.7					0.0	9.5	9.5	77.2		
25	2025	86.7				86.7					0.0	9.5	9.5	77.2		
26	2026	86.7				86.7					0.0	9.5	9.5	77.2		
27	2027	86.7				86.7					0.0	9.5	9.5	77.2		
28	2028	86.7				86.7					0.0	9.5	9.5	77.2		
29	2029	86.7				86.7					0.0	9.5	9.5	77.2		
30	2030	86.7				86.7					0.0	9.5	69.4	17.3		
31	2031	86.7				86.7					0.0	9.5	9.5	77.2		
32	2032	86.7				86.7					0.0	9.5	9.5	77.2		
33	2033	86.7				86.7					0.0	9.5	9.5	77.2		
34	2034	86.7				86.7					0.0	9.5	9.5	77.2		
35	2035	86.7				86.7					0.0	9.5	9.5	77.2		
36	2036	86.7				86.7					0.0	9.5	9.5	77.2		
37	2037	86.7				86.7					0.0	9.5	9.5	77.2		
38	2038	86.7				86.7					0.0	9.5	9.5	77.2		
39	2039	86.7				86.7					0.0	9.5	9.5	77.2		
40	2040	86.7				86.7					0.0	9.5	9.5	77.2		
41	2041	86.7				86.7					0.0	9.5	9.5	77.2		
42	2042	86.7				86.7					0.0	9.5	9.5	77.2		
43	2043	86.7				86.7					0.0	9.5	9.5	77.2		
44	2044	86.7				86.7					0.0	9.5	9.5	77.2		
45	2045	86.7				86.7					0.0	9.5	9.5	77.2		
46	2046	86.7				86.7					0.0	9.5	9.5	77.2		
47	2047	86.7				86.7					0.0	9.5	9.5	77.2		
48	2048	86.7				86.7					0.0	9.5	9.5	77.2		
49	2049	86.7				86.7					0.0	9.5	9.5	77.2		
50	2050	86.7				86.7					0.0	9.5	9.5	77.2		
51	2051	86.7				86.7					0.0	9.5	9.5	77.2		
52	2052	86.7				86.7					0.0	9.5	9.5	77.2		
53	2053	86.7				86.7					0.0	9.5	9.5	77.2		
54	2054	86.7				86.7					0.0	9.5	9.5	77.2		
55	2055	86.7				86.7					0.0	9.5	9.5	77.2		
EIRR=		6.2%														
B/C =		0.79 (at discount rate: 8%)														
NPV=		-174.7 (at discount rate: 8%)														
NPV=		25.5 (at discount rate: 6%)														
NPV=		-283.7 (at discount rate: 10%)														
NPV=		-343.0 (at discount rate: 12%)														

Table XVIII.2.9: Analyse du coût -Benefice des plans alternatifs d'irrigation (10/14)

TA3 Taskourt		Unit: million DH														
Year in order	Year	Benefit				Total Benefit	Cost						O/M	Replacement	Total Cost	Net Cash Flow
		Agriculture	Water supply	Flood & erosion control	Other		Dam	Irrigation	Resettle-ment	Engr. services	Administra-tion	Sub-total				
1	2001	0.0				0.0	0.0	0.0	13.5	1.2	14.7	0.0		14.7	-14.7	
2	2002	0.0				0.0	31.4	0.0			68.1	26.9	107.6	107.6	-107.6	
3	2003	0.0				0.0	68.1	26.9			7.8	4.8	107.6	107.6	-107.6	
4	2004	0.0				0.0	94.3	67.3			7.8	8.1	177.5	177.5	-177.5	
5	2005	0.0				0.0	94.3	40.4			7.9	6.7	149.3	149.3	-149.3	
6	2006	25.8				25.8					0.0	4.1	4.1	21.7		
7	2007	34.6				34.6					0.0	4.1	4.1	30.5		
8	2008	40.7				40.7					0.0	4.1	4.1	36.5		
9	2009	45.7				45.7					0.0	4.1	4.1	41.6		
10	2010	49.1				49.1					0.0	4.1	4.1	45.0		
11	2011	49.1				49.1					0.0	4.1	4.1	45.0		
12	2012	49.1				49.1					0.0	4.1	4.1	45.0		
13	2013	49.1				49.1					0.0	4.1	4.1	45.0		
14	2014	49.1				49.1					0.0	4.1	4.1	45.0		
15	2015	49.1				49.1					0.0	4.1	4.1	45.0		
16	2016	49.1				49.1					0.0	4.1	4.1	45.0		
17	2017	49.1				49.1					0.0	4.1	4.1	45.0		
18	2018	49.1				49.1					0.0	4.1	4.1	45.0		
19	2019	49.1				49.1					0.0	4.1	4.1	45.0		
20	2020	49.1				49.1					0.0	4.1	4.1	45.0		
21	2021	49.1				49.1					0.0	4.1	4.1	45.0		
22	2022	49.1				49.1					0.0	4.1	4.1	45.0		
23	2023	49.1				49.1					0.0	4.1	4.1	45.0		
24	2024	49.1				49.1					0.0	4.1	4.1	45.0		
25	2025	49.1				49.1					0.0	4.1	4.1	45.0		
26	2026	49.1				49.1					0.0	4.1	4.1	45.0		
27	2027	49.1				49.1					0.0	4.1	4.1	45.0		
28	2028	49.1				49.1					0.0	4.1	4.1	45.0		
29	2029	49.1				49.1					0.0	4.1	4.1	45.0		
30	2030	49.1				49.1					0.0	4.1	27.9	32.0	17.1	
31	2031	49.1				49.1					0.0	4.1	4.1	45.0		
32	2032	49.1				49.1					0.0	4.1	4.1	45.0		
33	2033	49.1				49.1					0.0	4.1	4.1	45.0		
34	2034	49.1				49.1					0.0	4.1	4.1	45.0		
35	2035	49.1				49.1					0.0	4.1	4.1	45.0		
36	2036	49.1				49.1					0.0	4.1	4.1	45.0		
37	2037	49.1				49.1					0.0	4.1	4.1	45.0		
38	2038	49.1				49.1					0.0	4.1	4.1	45.0		
39	2039	49.1				49.1					0.0	4.1	4.1	45.0		
40	2040	49.1				49.1					0.0	4.1	4.1	45.0		
41	2041	49.1				49.1					0.0	4.1	4.1	45.0		
42	2042	49.1				49.1					0.0	4.1	4.1	45.0		
43	2043	49.1				49.1					0.0	4.1	4.1	45.0		
44	2044	49.1				49.1					0.0	4.1	4.1	45.0		
45	2045	49.1				49.1					0.0	4.1	4.1	45.0		
46	2046	49.1				49.1					0.0	4.1	4.1	45.0		
47	2047	49.1				49.1					0.0	4.1	4.1	45.0		
48	2048	49.1				49.1					0.0	4.1	4.1	45.0		
49	2049	49.1				49.1					0.0	4.1	4.1	45.0		
50	2050	49.1				49.1					0.0	4.1	4.1	45.0		
51	2051	49.1				49.1					0.0	4.1	4.1	45.0		
52	2052	49.1				49.1					0.0	4.1	4.1	45.0		
53	2053	49.1				49.1					0.0	4.1	4.1	45.0		
54	2054	49.1				49.										

Table XVIII.2.9: Analyse du coût -Benefice des plans alternatifs d'irrigation (11/14)

T4 Taskourt														Unit: million DH									
Year in order	Year	Benefit				Total Benefit	Cost							O/M	Replacement	Total Cost	Net Cash Flow						
		Agriculture	Water supply	Flood & erosion control	Other		Dam	Irrigation	Investment	Resettle-ment	Engr. services	Administra-tion	Sub-total										
1	2001	0.0				0.0	0.0	0.0	13.5		1.2	14.7	0.0		14.7	-14.7							
2	2002	0.0				0.0	31.4	0.0	13.4		2.7	58.6	0.0		58.6	-58.6							
3	2003	0.0				0.0	68.1	61.5		11.1	6.5	147.2	0.0		147.2	-147.2							
4	2004	0.0				0.0	94.3	153.7		11.1	12.4	271.5	0.0		271.5	-271.5							
5	2005	0.0				0.0	94.3	92.1		11.0	9.3	206.7	0.0		206.7	-206.7							
6	2006	30.3				30.3						0.0	7.6		7.6	22.8							
7	2007	40.9				40.9						0.0	7.6		7.6	33.3							
8	2008	48.1				48.1						0.0	7.6		7.6	40.5							
9	2009	54.2				54.2						0.0	7.6		7.6	46.6							
10	2010	58.3				58.3						0.0	7.6		7.6	50.7							
11	2011	58.3				58.3						0.0	7.6		7.6	50.7							
12	2012	58.3				58.3						0.0	7.6		7.6	50.7							
13	2013	58.3				58.3						0.0	7.6		7.6	50.7							
14	2014	58.3				58.3						0.0	7.6		7.6	50.7							
15	2015	58.3				58.3						0.0	7.6		7.6	50.7							
16	2016	58.3				58.3						0.0	7.6		7.6	50.7							
17	2017	58.3				58.3						0.0	7.6		7.6	50.7							
18	2018	58.3				58.3						0.0	7.6		7.6	50.7							
19	2019	58.3				58.3						0.0	7.6		7.6	50.7							
20	2020	58.3				58.3						0.0	7.6		7.6	50.7							
21	2021	58.3				58.3						0.0	7.6		7.6	50.7							
22	2022	58.3				58.3						0.0	7.6		7.6	50.7							
23	2023	58.3				58.3						0.0	7.6		7.6	50.7							
24	2024	58.3				58.3						0.0	7.6		7.6	50.7							
25	2025	58.3				58.3						0.0	7.6		7.6	50.7							
26	2026	58.3				58.3						0.0	7.6		7.6	50.7							
27	2027	58.3				58.3						0.0	7.6		7.6	50.7							
28	2028	58.3				58.3						0.0	7.6		7.6	50.7							
29	2029	58.3				58.3						0.0	7.6		7.6	50.7							
30	2030	58.3				58.3						0.0	7.6	45.1	52.7	5.6							
31	2031	58.3				58.3						0.0	7.6		7.6	50.7							
32	2032	58.3				58.3						0.0	7.6		7.6	50.7							
33	2033	58.3				58.3						0.0	7.6		7.6	50.7							
34	2034	58.3				58.3						0.0	7.6		7.6	50.7							
35	2035	58.3				58.3						0.0	7.6		7.6	50.7							
36	2036	58.3				58.3						0.0	7.6		7.6	50.7							
37	2037	58.3				58.3						0.0	7.6		7.6	50.7							
38	2038	58.3				58.3						0.0	7.6		7.6	50.7							
39	2039	58.3				58.3						0.0	7.6		7.6	50.7							
40	2040	58.3				58.3						0.0	7.6		7.6	50.7							
41	2041	58.3				58.3						0.0	7.6		7.6	50.7							
42	2042	58.3				58.3						0.0	7.6		7.6	50.7							
43	2043	58.3				58.3						0.0	7.6		7.6	50.7							
44	2044	58.3				58.3						0.0	7.6		7.6	50.7							
45	2045	58.3				58.3						0.0	7.6		7.6	50.7							
46	2046	58.3				58.3						0.0	7.6		7.6	50.7							
47	2047	58.3				58.3						0.0	7.6		7.6	50.7							
48	2048	58.3				58.3						0.0	7.6		7.6	50.7							
49	2049	58.3				58.3						0.0	7.6		7.6	50.7							
50	2050	58.3				58.3						0.0	7.6		7.6	50.7							
51	2051	58.3				58.3						0.0	7.6		7.6	50.7							
52	2052	58.3				58.3						0.0	7.6		7.6	50.7							
53	2053	58.3				58.3						0.0	7.6		7.6	50.7							
54	2054	58.3				58.3						0.0	7.6		7.6	50.7							
55	2055	58.3				58.3						0.0	7.6		7.6	50.7							
EIRR =		5.9%																					
B/C =		0.76 (at discount rate: 8%)																					
NPV=		-138.5 (at discount rate: 8%)																					
NPV=		-9.8 (at discount rate: 6%)																					
NPV=		-207.8 (at discount rate: 10%)																					
NPV=		-244.6 (at discount rate: 12%)																					

Table XVIII.2.9: Analyse du coût -Benefice des plans alternatifs d'irrigation (12/14)

T11 Timkit														Unit: million DH									
Year in order	Year	Benefit				Total Benefit	Cost							O/M	Replacement	Total Cost	Net Cash Flow						
		Agriculture	Water supply	Flood & erosion control	Other		Dam	Irrigation	Investment	Resettle-ment	Engr. services	Administra-tion	Sub-total										
1	2001	0.0				0.0	0.0	0.0							0.0	3.1	0.0	3.1	-3.1				
2	2002	0.0				0.0	28.3	0.0							3.0	5.3	1.6	38.2	-38.2				
3	2003	0.0				0.0	37.7	23.0							5.3	3.0	69.0	69.0	-69.0				
4	2004	0.0				0.0	56.6	57.5							5.3	5.7	125.1	125.1	-125.1				
5	2005	0.0				0.0	47.2	34.4							5.2	4.1	90.9	90.9	-90.9				
6	2006	15.6				15.6									0.0	3.5	3.5	12.1					
7	2007	21.7				21.7									0.0	3.5	3.5	18.2					
8	2008	25.2				25.2									0.0	3.5	3.5	21.7					
9	2009	27.1				27.1									0.0	3.5	3.5	23.6					
10	2010	28.1				28.1									0.0	3.5	3.5	24.6					
11	2011	28.1				28.1									0.0	3.5	3.5	24.6					
12	2012	28.1				28.1									0.0	3.5	3.5	24.6					
13	2013	28.1				28.1									0.0	3.5	3.5	24.6					
14	2014	28.1				28.1									0.0	3.5	3.5	24.6					
15	2015	28.1				28.1									0.0	3.5	3.5	24.6					
16	2016	28.1				28.1									0.0	3.5	3.5	24.6					
17	2017	28.1				28.1									0.0	3.5	3.5	24.6					
18	2018	28.1				28.1									0.0	3.5	3.5	24.6					
19	2019	28.1				28.1									0.0	3.5	3.5	24.6					
20	2020	28.1				28.1									0.0	3.5	3.5	24.6					
21	2021	28.1				28.1									0.0	3.5	3.5	24.6					
22	2022	28.1				28.1									0.0	3.5	3.5	24.6					
23	2023	28.1				28.1									0.0	3.5	3.5	24.6					
24	2024	28.1				28.1									0.0	3.5	3.5	24.6					
25	2025	28.1				28.1									0.0	3.5	3.5	24.6					
26	2026	28.1				28.1									0.0	3.5	3.5	24.6					
27	2027	28.1				28.1									0.0	3.5	3.5	24.6					
28	2028	28.1				28.1									0.0	3.5	3.5	24.6					
29	2029	28.1				28.1									0.0	3.5	3.5	24.6					
30	2030	28.1				28.1									0.0	3.5	23.5	4.6					
31	2031	28.1				28.1									20.0	3.5	3.5	24.6					
32	2032	28.1				28.1									0.0	3.5	3.5	24.6					
33	2033	28.1				28.1									0.0	3.5	3.5	24.6					
34	2034	28.1				28.1									0.0	3.5	3.5	24.6					
35	2035	28.1				28.1									0.0	3.5	3.5	24.6					
36	2036	28.1				28.1									0.0	3.5	3.5	24.6					
37	2037	28.1				28.1									0.0	3.5	3.5	24.6					
38	2038	28.1				28.1									0.0	3.5	3.5	24.6					
39	2039	28.1				28.1									0.0	3.5	3.5	24.6					
40	2040	28.1				28.1									0.0	3.5	3.5	24.6					
41	2041	28.1				28.1									0.0	3.5	3.5	24.6					
42	2042	28.1				28.1									0.0	3.5	3.5	24.6					
43	2043	28.1				28.1									0.0	3.5	3.5	24.6					
44	2044	28.1				28.1									0.0	3.5	3.5	24.6					
45	2045	28.1				28.1									0.0	3.5	3.5	24.6					
46	2046</																						

Table XVIII.2.9: Analyse du coût -Benefice des plans alternatifs d'irrigation (13/14)

TI2 Timkit		Unit: million DH													
Year in order	Year	Agriculture	Water supply	Benefit			Cost							Net Cash Flow	
				Flood & erosion control	Other	Total Benefit	Dam	Irrigation	Resettle-ment	Engr- services	Administra- tion	Sub-total	O/M		Replace- ment
1	2001	0.0				0.0	0.0	0.0	3.0		0.1	3.1	0.0	3.1	-3.1
2	2002	0.0				0.0	28.3	0.0	3.0	1.6	38.2	0.0	38.2	-38.2	
3	2003	0.0				0.0	37.7	23.0		5.3	3.0	69.0	0.0	69.0	-69.0
4	2004	0.0				0.0	56.6	57.5		5.2	5.7	125.0	0.0	125.0	-125.0
5	2005	0.0				0.0	47.2	34.4		5.3	4.1	91.0	0.0	91.0	-91.0
6	2006	14.6				14.6						0.0	3.6	3.6	11.0
7	2007	20.2				20.2						0.0	3.6	3.6	16.6
8	2008	23.5				23.5						0.0	3.6	3.6	19.9
9	2009	25.2				25.2						0.0	3.6	3.6	21.6
10	2010	26.2				26.2						0.0	3.6	3.6	22.6
11	2011	26.2				26.2						0.0	3.6	3.6	22.6
12	2012	26.2				26.2						0.0	3.6	3.6	22.6
13	2013	26.2				26.2						0.0	3.6	3.6	22.6
14	2014	26.2				26.2						0.0	3.6	3.6	22.6
15	2015	26.2				26.2						0.0	3.6	3.6	22.6
16	2016	26.2				26.2						0.0	3.6	3.6	22.6
17	2017	26.2				26.2						0.0	3.6	3.6	22.6
18	2018	26.2				26.2						0.0	3.6	3.6	22.6
19	2019	26.2				26.2						0.0	3.6	3.6	22.6
20	2020	26.2				26.2						0.0	3.6	3.6	22.6
21	2021	26.2				26.2						0.0	3.6	3.6	22.6
22	2022	26.2				26.2						0.0	3.6	3.6	22.6
23	2023	26.2				26.2						0.0	3.6	3.6	22.6
24	2024	26.2				26.2						0.0	3.6	3.6	22.6
25	2025	26.2				26.2						0.0	3.6	3.6	22.6
26	2026	26.2				26.2						0.0	3.6	3.6	22.6
27	2027	26.2				26.2						0.0	3.6	3.6	22.6
28	2028	26.2				26.2						0.0	3.6	3.6	22.6
29	2029	26.2				26.2						0.0	3.6	3.6	22.6
30	2030	26.2				26.2					20.0	3.6	23.6	2.6	
31	2031	26.2				26.2						0.0	3.6	3.6	22.6
32	2032	26.2				26.2						0.0	3.6	3.6	22.6
33	2033	26.2				26.2						0.0	3.6	3.6	22.6
34	2034	26.2				26.2						0.0	3.6	3.6	22.6
35	2035	26.2				26.2						0.0	3.6	3.6	22.6
36	2036	26.2				26.2						0.0	3.6	3.6	22.6
37	2037	26.2				26.2						0.0	3.6	3.6	22.6
38	2038	26.2				26.2						0.0	3.6	3.6	22.6
39	2039	26.2				26.2						0.0	3.6	3.6	22.6
40	2040	26.2				26.2						0.0	3.6	3.6	22.6
41	2041	26.2				26.2						0.0	3.6	3.6	22.6
42	2042	26.2				26.2						0.0	3.6	3.6	22.6
43	2043	26.2				26.2						0.0	3.6	3.6	22.6
44	2044	26.2				26.2						0.0	3.6	3.6	22.6
45	2045	26.2				26.2						0.0	3.6	3.6	22.6
46	2046	26.2				26.2						0.0	3.6	3.6	22.6
47	2047	26.2				26.2						0.0	3.6	3.6	22.6
48	2048	26.2				26.2						0.0	3.6	3.6	22.6
49	2049	26.2				26.2						0.0	3.6	3.6	22.6
50	2050	26.2				26.2						0.0	3.6	3.6	22.6
51	2051	26.2				26.2						0.0	3.6	3.6	22.6
52	2052	26.2				26.2						0.0	3.6	3.6	22.6
53	2053	26.2				26.2						0.0	3.6	3.6	22.6
54	2054	26.2				26.2						0.0	3.6	3.6	22.6
55	2055	26.2				26.2						0.0	3.6	3.6	22.6
EIRR=		5.7%													
B/C =		0.74 (at discount rate: 8%)													
NPV=		-70.8 (at discount rate: 8%)													
NPV=		-13.6 (at discount rate: 6%)													
NPV=		-101.4 (at discount rate: 10%)													
NPV=		-117.6 (at discount rate: 12%)													

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Table XVIII.2.9: Analyse du coût -Benefice des plans alternatifs d'irrigation (14/14)

AZI Azghar		Unit: million DH															
Year in order	Year	Agriculture	Water supply	Benefit			Neg. benefit to downstream reservoir	Total Benefit	Cost							Net Cash Flow	
				Flood & erosion control	Other	Dam			Irrigation	Resettle-ment	Engr- services	Physical conti.	Sub-total	O/M	Replace- ment		Total Cost
1	2001	0.0				0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	-2.5
2	2002	0.0				0.0	0.0	0.0	28.6	15.0	2.4	4.9	2.3	53.2	0.0	53.2	-53.2
3	2003	0.0				0.0	0.0	0.0	44.5	37.5	4.1	4.7	4.1	90.8	0.0	90.8	-90.8
4	2004	0.0				0.0	0.0	0.0	44.5	22.5	4.7	3.4	3.4	75.1	0.0	75.1	-75.1
5	2005	19.8				-22.1	-2.3							0.0	2.1	2.1	-4.4
6	2006	22.1				-22.1	10.0							0.0	2.1	2.1	7.9
7	2007	41.4				-22.1	19.3							0.0	2.1	2.1	17.2
8	2008	51.3				-22.1	29.2							0.0	2.1	2.1	27.1
9	2009	58.3				-22.1	36.2							0.0	2.1	2.1	34.1
10	2010	58.3				-22.1	36.2							0.0	2.1	2.1	34.1
11	2011	58.3				-22.1	36.2							0.0	2.1	2.1	34.1
12	2012	58.3				-22.1	36.2							0.0	2.1	2.1	34.1
13	2013	58.3				-22.1	36.2							0.0	2.1	2.1	34.1
14	2014	58.3				-22.1	36.2							0.0	2.1	2.1	34.1
15	2015	58.3				-22.1	36.2							0.0	2.1	2.1	34.1
16	2016	58.3				-22.1	36.2							0.0	2.1	2.1	34.1
17	2017	58.3				-22.1	36.2							0.0	2.1	2.1	34.1
18	2018	58.3				-22.1	36.2							0.0	2.1	2.1	34.1
19	2019	58.3				-22.1	36.2							0.0	2.1	2.1	34.1
20	2020	58.3				-22.1	36.2							0.0	2.1	2.1	34.1
21	2021	58.3				-22.1	36.2							0.0	2.1	2.1	34.1
22	2022	58.3				-22.1	36.2							0.0	2.1	2.1	34.1
23	2023	58.3				-22.1	36.2							0.0	2.1	2.1	34.1
24	2024	58.3				-22.1	36.2							0.0	2.1	2.1	34.1
25	2025	58.3				-22.1	36.2							0.0	2.1	2.1	34.1
26	2026	58.3				-22.1	36.2							0.0	2.1	2.1	34.1
27	2027	58.3				-22.1	36.2							0.0	2.1	2.1	34.1
28	2028	58.3				-22.1	36.2							0.0	2.1	2.1	34.1
29	2029	58.3				-22.1	36.2							0.0	2.1	15.5	20.7
30	2030	58.3				-22.1	36.2							0.0	2.1	13.4	21.3
31	2031	58.3				-22.1	36.2							0.0	2.1	2.1	34.1
32	2032	58.3				-22.1	36.2							0.0	2.1	2.1	34.1
33	2033	58.3				-22.1	36.2							0.0	2.1	2.1	34.1
34	2034	58.3				-22.1	36.2							0.0	2.1	2.1	34.1
35	2035	58.3				-22.1	36.2							0.0	2.1	2.1	34.1
36	2036	58.3				-22.1	36.2							0.0	2.1	2.1	34.1
37	2037	58.3				-22.1	36.2							0.0	2.1	2.1	34.1
38	2038	58.3				-22.1	36.2							0.0	2.1	2.1	34.1
39	2039	58.3				-22.1	36.2							0.0	2.1	2.1	34.1
40	2040	58.3				-22.1	36.2							0.0	2.1	2.1	34.1
41	2041	58.3				-22.1	36.2							0.0	2.1	2.1	34.1
42	2042	58.3				-22.1	36.2							0.0	2.1	2.1	34.1
43	2043	58.3				-22.1	36.2							0.0	2.1	2.1	34.1
44	2044	58.3				-22.1	36.2							0.0	2.1	2.1	34.1
45	2045	58.3				-22.1	36.2							0.0	2.1	2.1	34.1
46	2046	58.3				-22.1	36.2							0.0	2.1	2.1	34.1
47	2047	58.3				-22.1	36.2							0.0	2.1	2.1	34.1

Table XVIII.2.10: Résultats de l'évaluation économique des plans alternatifs d'irrigation (Agricultural Benefit Only)

Project	Alter-native	EIRR	B/C DR=8%	NPV (Unit: Million DH)				Remarks
				DR=6%	DR=8%	DR=10%	DR=12%	
N'fifikh (upstream)	NU1	4.5%	0.62	-39.1	-69.8	-86.3	-95.1	
	NU2	-0.7%	0.24	-137.6	-140.1	-138.8	-135.6	
	NU3	6.1%	0.77	2.2	-41.7	-66.4	-80.4	
	NU4	3.6%	0.55	-77.9	-109.0	-124.9	-132.6	
	NU5	3.9%	0.58	-54.5	-81.3	-95.3	-102.3	
N'fifikh (downstream)	ND1	4.5%	0.65	-8.0	-13.9	-17.0	-18.6	
	ND2	2.9%	0.50	-44.4	-55.5	-60.8	-63.0	
Taskourt	TA1	7.2%	0.91	128.2	-59.1	-164.0	-223.6	
	TA2	6.2%	0.79	25.5	-174.7	-283.7	-343.0	
	TA3	7.3%	0.91	85.9	-36.2	-104.5	-143.3	
	TA4	5.9%	0.76	-9.8	-138.5	-207.8	-244.6	
Timkit	TI1	6.2%	0.80	8.9	-55.1	-89.9	-108.9	
	TI2	5.7%	0.74	-13.6	-70.8	-101.4	-117.6	
Azghar	AZ1	10.6%	1.38	175.1	73.7	13.8	-23.1	After adjustment of the negative benefit to downstream reservoirs.

Table XVIII.2.3.1: Coût financier et économique d'un projet de petite échelle d'approvisionnement en eau

Unit: Million DH

Cost Item	F.C.		L.C.		Total financial cost	Total economic cost
	Financial cost	Economic cost	Financial cost	Economic cost		
N'fifikh (Upstream)						
1. Construction cost						
1.1 Small-scale water supply facilities	-	-	1.80	1.11	1.80	1.11
2. Resettlement cost	-	-	-	-	-	-
3. Engineering services cost	-	-	0.13	0.11	0.13	0.11
4. Administration cost	-	-	0.09	0.06	0.09	0.06
Total of (1.- 4.)	-	-	2.02	1.28	2.02	1.28
Taskourt						
1. Construction cost						
1.1 Small-scale water supply facilities	-	-	3.00	1.89	3.00	1.89
2. Resettlement cost	-	-	-	-	-	-
3. Engineering services cost	-	-	0.21	0.18	0.21	0.18
4. Administration cost	-	-	0.15	0.09	0.15	0.09
Total of (1.- 4.)	-	-	3.36	2.16	3.36	2.16

Table XVIII.2.3.2 Coût annuel d'un projet de petite échelle d'approvisionnement en eau (Economic Price, million DH)

Cost Item	Year in Order					Total cost (million DH)
	1st	2nd	3rd	4th	5th	
N'fifikh (Upstream)						
1. Construction cost						
1.1 Small-scale water supply facilities	-	-	-	1.11	-	1.11
2. Resettlement cost	-	-	-	-	-	-
3. Engineering services cost	-	-	-	0.11	-	0.11
4. Administration cost	-	-	-	0.06	-	0.06
Total of (1.- 4.)	-	-	-	1.28	-	1.28
Taskourt						
1. Construction cost						
1.1 Small-scale water supply facilities	-	-	-	-	1.89	1.89
2. Resettlement cost	-	-	-	-	-	-
3. Engineering services cost	-	-	-	-	0.18	0.18
4. Administration cost	-	-	-	-	0.09	0.09
Total of (1.- 4.)	-	-	-	-	2.16	2.16

Table XVIII.2.3.3: Coût financier et économique de projet (1/2)
de petite échelle d'approvisionnement en eau

N'Fifikh		Benefit			Cost							Net Cash Flow
Year in order	Year	Water supply	Other	Total	Water S. facility	E/S	Adminis- tration	Sub-total	O/M	Replace- ment	Total	Net Cash Flow
1	2001	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000		0.000	0.000
2	2002	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000		0.000	0.000
3	2003	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000		0.000	0.000
4	2004	0.000	0.000	0.000	1.110	0.110	0.060	1.280	0.000		1.280	-1.280
5	2005	0.144	0.000	0.144				0.000	0.056		0.056	0.089
6	2006	0.145	0.000	0.145				0.000	0.056		0.056	0.090
7	2007	0.146	0.000	0.146				0.000	0.056		0.056	0.091
8	2008	0.147	0.000	0.147				0.000	0.056		0.056	0.092
9	2009	0.148	0.000	0.148				0.000	0.056		0.056	0.093
10	2010	0.149	0.000	0.149				0.000	0.056		0.056	0.094
11	2011	0.150	0.000	0.150				0.000	0.056		0.056	0.095
12	2012	0.151	0.000	0.151				0.000	0.056		0.056	0.096
13	2013	0.152	0.000	0.152				0.000	0.056		0.056	0.097
14	2014	0.153	0.000	0.153				0.000	0.056		0.056	0.098
15	2015	0.155	0.000	0.155				0.000	0.056		0.056	0.099
16	2016	0.156	0.000	0.156				0.000	0.056		0.056	0.100
17	2017	0.157	0.000	0.157				0.000	0.056		0.056	0.101
18	2018	0.158	0.000	0.158				0.000	0.056		0.056	0.102
19	2019	0.159	0.000	0.159				0.000	0.056		0.056	0.103
20	2020	0.160	0.000	0.160				0.000	0.056		0.056	0.105
21	2021	0.160	0.000	0.160				0.000	0.056		0.056	0.105
22	2022	0.160	0.000	0.160				0.000	0.056		0.056	0.105
23	2023	0.160	0.000	0.160				0.000	0.056		0.056	0.105
24	2024	0.160	0.000	0.160				0.000	0.056		0.056	0.105
25	2025	0.160	0.000	0.160				0.000	0.056		0.056	0.105
26	2026	0.160	0.000	0.160				0.000	0.056		0.056	0.105
27	2027	0.160	0.000	0.160				0.000	0.056		0.056	0.105
28	2028	0.160	0.000	0.160				0.000	0.056		0.056	0.105
29	2029	0.160	0.000	0.160				0.000	0.056	1.110	1.166	-1.006
30	2030	0.160	0.000	0.160				0.000	0.056		0.056	0.105
31	2031	0.160	0.000	0.160				0.000	0.056		0.056	0.105
32	2032	0.160	0.000	0.160				0.000	0.056		0.056	0.105
33	2033	0.160	0.000	0.160				0.000	0.056		0.056	0.105
34	2034	0.160	0.000	0.160				0.000	0.056		0.056	0.105
35	2035	0.160	0.000	0.160				0.000	0.056		0.056	0.105
36	2036	0.160	0.000	0.160				0.000	0.056		0.056	0.105
37	2037	0.160	0.000	0.160				0.000	0.056		0.056	0.105
38	2038	0.160	0.000	0.160				0.000	0.056		0.056	0.105
39	2039	0.160	0.000	0.160				0.000	0.056		0.056	0.105
40	2040	0.160	0.000	0.160				0.000	0.056		0.056	0.105
41	2041	0.160	0.000	0.160				0.000	0.056		0.056	0.105
42	2042	0.160	0.000	0.160				0.000	0.056		0.056	0.105
43	2043	0.160	0.000	0.160				0.000	0.056		0.056	0.105
44	2044	0.160	0.000	0.160				0.000	0.056		0.056	0.105
45	2045	0.160	0.000	0.160				0.000	0.056		0.056	0.105
46	2046	0.160	0.000	0.160				0.000	0.056		0.056	0.105
47	2047	0.160	0.000	0.160				0.000	0.056		0.056	0.105
48	2048	0.160	0.000	0.160				0.000	0.056		0.056	0.105
49	2049	0.160	0.000	0.160				0.000	0.056		0.056	0.105
50	2050	0.160	0.000	0.160				0.000	0.056		0.056	0.105
51	2051	0.160	0.000	0.160				0.000	0.056		0.056	0.105
52	2052	0.160	0.000	0.160				0.000	0.056		0.056	0.105
53	2053	0.160	0.000	0.160				0.000	0.056		0.056	0.105
54	2054	0.160	0.000	0.160				0.000	0.056		0.056	0.105
EIRR		6.1%										

Table XVIII.2.3.3: Coût financier et économique de projet (2/2)
de petite échelle d'approvisionnement en eau

Taskourt		Benefit			Cost							Net Cash Flow
Year in order	Year	Water supply	Other	Total	Water S. facility	E/S	Adminis- tration	Sub-total	O/M	Replace- ment	Total	Net Cash Flow
1	2001	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000		0.000	0.000
2	2002	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000		0.000	0.000
3	2003	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000		0.000	0.000
4	2004	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000		0.000	0.000
5	2005	0.000	0.000	0.000	1.890	0.180	0.090	2.160	0.000		2.160	-2.160
6	2006	0.254	0.000	0.254				0.000	0.095		0.000	0.159
7	2007	0.256	0.000	0.256				0.000	0.095		0.000	0.161
8	2008	0.258	0.000	0.258				0.000	0.095		0.000	0.163
9	2009	0.259	0.000	0.259				0.000	0.095		0.000	0.165
10	2010	0.261	0.000	0.261				0.000	0.095		0.000	0.167
11	2011	0.263	0.000	0.263				0.000	0.095		0.000	0.168
12	2012	0.265	0.000	0.265				0.000	0.095		0.000	0.170
13	2013	0.267	0.000	0.267				0.000	0.095		0.000	0.172
14	2014	0.269	0.000	0.269				0.000	0.095		0.000	0.174
15	2015	0.270	0.000	0.270				0.000	0.095		0.000	0.176
16	2016	0.272	0.000	0.272				0.000	0.095		0.000	0.178
17	2017	0.274	0.000	0.274				0.000	0.095		0.000	0.180
18	2018	0.276	0.000	0.276				0.000	0.095		0.000	0.182
19	2019	0.278	0.000	0.278				0.000	0.095		0.000	0.184
20	2020	0.280	0.000	0.280				0.000	0.095		0.000	0.186
21	2021	0.280	0.000	0.280				0.000	0.095		0.000	0.186
22	2022	0.280	0.000	0.280				0.000	0.095		0.000	0.186
23	2023	0.280	0.000	0.280				0.000	0.095		0.000	0.186
24	2024	0.280	0.000	0.280				0.000	0.095		0.000	0.186
25	2025	0.280	0.000	0.280				0.000	0.095		0.000	0.186
26	2026	0.280	0.000	0.280				0.000	0.095		0.000	0.186
27	2027	0.280	0.000	0.280				0.000	0.095		0.000	0.186
28	2028	0.280	0.000	0.280				0.000	0.095		0.000	0.186
29	2029	0.280	0.000	0.280				0.000	0.095	1.890	1.985	-1.705
30	2030	0.280	0.000	0.280				0.000	0.095		0.000	0.186
31	2031	0.280	0.000	0.280				0.000	0.095		0.000	0.186
32	2032	0.280	0.000	0.280				0.000	0.095		0.000	0.186
33	2033	0.280	0.000	0.280				0.000	0.095		0.000	0.186
34	2034	0.280	0.000	0.280				0.000	0.095		0.000	0.186
35	2035	0.280	0.000	0.280				0.000	0.095		0.000	0.186
36	2036	0.280	0.000	0.280				0.000	0.095		0.000	0.186
37	2037	0.280	0.000	0.280				0.000	0.095		0.000	0.186
38	2038	0.280	0.000	0.280				0.000	0.095		0.000	0.186
39	2039	0.280	0.000	0.280				0.000	0.095		0.000	0.186
40	2040	0.280	0.000	0.280				0.000	0.095		0.000	0.186
41	2041	0.280	0.000	0.280				0.000	0.095		0.000	0.186
42	2042	0.280	0.000	0.280				0.000	0.095		0.000	0.186
43	2043	0.280	0.000	0.280				0.000	0.095		0.000	0.186
44	2044	0.280	0.000	0.280				0.000	0.095		0.000	0.186
45	2045	0.280	0.000	0.280				0.000	0.095		0.000	0.186
46	2046	0.280	0.000	0.280				0.000	0.095		0.000	0.186
47	2047	0.280	0.000	0.280				0.000	0.095		0.000	0.186
48	2048	0.280	0.000	0.280				0.000	0.095		0.000	0.186
49	2049	0.280	0.000	0.280				0.000	0.095		0.000	0.186
50	2050	0.280	0.000	0.280				0.000	0.095		0.000	0.186
51	2051	0.280	0.000	0.280				0.000	0.095		0.000	0.186
52	2052	0.280	0.000	0.280				0.000	0.095		0.000	0.186
53	2053	0.280	0.000	0.280				0.000	0.095		0.000	0.186
54	2054	0.280	0.000	0.280				0.000	0.095		0.000	0.186
55												

Table XVIII2.4.1: Estimation de la zone dommageable

	Household Interview Survey					Damageable Area		
	Total Area	Inundation area		Eroded area		Project	Inundation	Eroded
	(ha)	Area (ha)	% of total	Area (ha)	% of total	Area (ha)	Area (ha)	Area (ha)
	a	b	c=b/a	d	e=d/a	f	g=e x f	h=e x f
N'fifikh (Upstream)	365	17.1	4.7%	2.4	0.7%	1,000	47	7
Taskourt	600	14.7	2.4%	7.4	1.2%	4,500	110	55
Timkit	200	9.9	5.0%	1.3	0.6%	1,350	67	9
Azghar	220	6.5	3.0%	4.1	1.9%	2,000	59	37

Table XVIII2.4.2: Estimation des bénéfices liés à réduction des Inondations

Project	Damageable area (ha)	Damageable property		Damageable amount	Damage to irrigation facilities	Total inundation damage	Annual mean flood damage
		Net income	Production cost				
	a	b	c	d=a*((b*5)+(c/2))	e = d x 100 %	f=d+e	g
N'fifikh (Upstream)	47	2,267	1,844	361,817	361,817	723,635	108,545
Taskourt	110	2,594	1,572	943,337	943,337	1,886,674	283,001
Timkit	67	7,679	1,848	1,605,387	1,605,387	3,210,774	481,616
Azghar	59	165	1,406	70,791	70,791	141,582	21,237

Table XVIII2.4.3: Estimation des bénéfices liés à réduction de l'érosion

	Damageable area (ha)	Damageable property		Damageable amount	Annual mean flood damage
		Net income	Production cost		
	a	b	c	d=a*((b*5)+(c/2))	e
N'fifikh (Upstream)	7	2,267	1,844	80,594	12,089
Taskourt	55	2,594	1,572	761,395	114,209
Timkit	9	7,679	1,848	353,871	53,081
Azghar	37	165	1,406	56,953	8,543

**Table XVIII2.4.4: Calcul d'avantage économiquement induit de taux (1/2)
(du secteur de construction à d'autres industries)**

No.	Item	No. of IO table	Production increase against investment for construction sector (% for investment)	Production in 1990 (million DH)	Value Added in 1990 (million DH)	Ratio of Value Added	Ratio of Induce Benefit (%)
a	b	c	d	e	f=e/d	g=c x f	
24	Phosphates	24	0.4	6 808.80	4 494.90	0.66	0.3
25	NonMetMin	25	5.2	929.30	203.60	0.22	1.1
26	Met Min	26	-	927.90	657.00	0.71	0.0
27	Crude petrol	27	3.7	263.40	115.05	0.44	1.6
28	Refine petrol	28	7.1	15 290.10	6 867.55	0.45	3.2
29	Electricity	29	1.4	6 833.30	6 086.30	0.89	1.2
30	Ind Allm		0.2	15 574.40	1 595.30	0.10	0.0
		30		8 157.57	342.74		
		31		885.40	159.46		
		32		6 162.06	1 039.85		
		33		369.37	53.25		
31	Other Ind Allm		0.1	14 271.11	3 234.90	0.23	0.0
		34		3 185.17	1 054.91		
		35		59.92	5.20		
		36		2 187.44	476.80		
		37		3 953.61	516.24		
		38		1 978.83	628.90		
		39		1 866.94	438.91		
		40		1 039.20	113.94		
32	Bev. Tobac		0.8	7 739.49	5 324.90	0.69	0.6
		41		1 204.35	790.42		
		42		919.71	328.20		
		43		2.22	0.75		
		44		1 051.04	508.42		
		45		4 562.17	3 697.11		
33	Textile		0.7	14 206.31	2 904.99	0.20	0.1
		46		1 139.30	259.68		
		47		6 131.01	1 243.50		
		48		1 510.67	258.87		
		49		1 156.74	264.02		
		50		926.88	190.16		
		51		690.02	152.67		
		52		2 651.69	536.09		
34	Cloths		-	8 903.60	3 770.70	0.42	0.0
		53		853.63	361.52		
		54		7 474.26	3 165.37		
		55		575.71	243.81		
35	Leather shoes		0.7	13 615.79	7 401.40	0.54	0.4
		56		4 431.53	2 013.43		
		57		3 060.86	1 644.66		
		58		6 123.40	3 743.31		
36	Wood		5.4	4 205.79	1 687.70	0.40	2.2
		59		613.14	104.68		
		60		851.85	488.82		
		61		665.25	187.10		
		62		664.38	267.19		
		63		957.47	474.41		
		64		453.70	165.50		
37	Paper		1.2	6 283.60	1 312.30	0.21	0.3
		65		2 329.99	557.62		
		66		2 498.59	377.76		
		67		1 455.02	376.92		
38	Quarr Min		32.8	12 156.80	3 272.71	0.27	8.8
		68		1 451.39	306.01		
		69		791.48	137.90		
		70		685.95	166.39		
		71		5 527.46	1 758.21		
		72		1 636.57	500.96		
		73		900.44	154.87		
		74		1 163.51	248.37		
39	Met Ind		10.1	3 869.80	761.90	0.20	2.0
		75		2 910.51	670.59		
		76		959.29	91.31		

Table XVIII.2.4.4: Calcul d'avantage économiquement induit de taux (2/2)
(du secteur de construction à d'autres industries)

No.	Item	No. of IO table	Production increase against investment for construction sector (% for investment)	Production in 1990 (million DH)	Value Added in 1990 (million DH)	Ratio of Value Added	Ratio of Induce Benefit (%)
a	b	c	d	e	f=e/d	g=c x f	
40	Met Obj		8.8	8 287.81	1 669.09	0.20	1.8
		77		288.36	105.90		
		78		338.70	126.77		
		79		2 778.32	594.15		
		80		1 503.24	292.50		
		81		2 282.80	223.59		
		82		342.70	137.54		
		83		531.96	127.44		
		84		221.73	61.20		
41	Equipm		0.5	1 903.91	533.81	0.28	0.1
		85		93.67	38.70		
		86		114.09	53.26		
		87		38.38	17.51		
		88		103.45	33.94		
		89		53.22	18.16		
		90		586.23	194.84		
		91		914.87	177.40		
42	Transp Mat		0.8	4 981.79	1 177.20	0.24	0.2
		92		2 208.42	438.12		
		93		2 174.73	574.14		
		94		352.51	57.79		
		95		90.81	49.40		
		96		137.18	50.51		
		97		0.00	0.00		
		98		18.14	7.24		
43	Elect Mat		3.0	4 867.30	1 109.59	0.23	0.7
		99		34.43	17.39		
		100		531.60	138.61		
		101		29.17	7.70		
		102		1 338.48	200.02		
		103		541.76	179.58		
		104		96.63	23.78		
		105		1 391.29	307.55		
		106		318.80	70.27		
		107		585.14	164.69		
44	Precinst		0.2	111.99	58.30	0.52	0.1
		108		28.77	18.46		
		109		68.35	33.66		
		110		8.29	4.11		
		111		6.58	2.07		
45	Chemicals		4.3	17 758.90	3 441.91	0.19	0.8
		112		8 359.45	1 150.83		
		113		2 809.57	504.17		
		114		834.72	281.13		
		115		1 254.64	315.59		
		116		1 967.09	538.54		
		117		1 616.65	401.37		
		118		916.78	250.28		
46	Rubber		0.7	3 008.50	861.50	0.29	0.2
		119		1 031.78	437.17		
		120		186.65	56.39		
		121		1 790.07	367.94		
47	Other Ind		0.1	675.31	155.61	0.23	0.0
		122		115.30	29.28		
		123		0.00	0.00		
		124		35.91	11.56		
		125		524.10	114.77		
48	Construct		3.3	29 315.10	10 276.35	0.35	1.2
49	Commerce		-	37 803.09	23 162.01	0.61	0.0
50	Banking		3.5	14 646.80	10 274.80	0.70	2.5
51	Insurance		0.9	3 945.80	3 549.55	0.90	0.8
52	Banking		5.3	12 836.00	6 492.25	0.51	2.7
53	Insurance		-	1 811.90	33.50	0.02	0.0
54	Oth Service		11.0	66 555.90	22 384.50	0.34	3.7
55	Pub. Adm.		-	34 513.80	24 716.68	0.72	0.0
	Total		112.2				36.6

**Table XVIII2.4.5: Calcul d'avantage économiquement induit de taux
(du secteur d'agriculture à d'autres industries)**

No.	Item	Effect from Agricultural Production to Other Industries (%)											Ratio of Value Added	Ratio of Economically Induced Benefit (%)													
		Hard wheat	Soft wheat	Barley	Legume	Vegetable	Alfalfa	Olive	Grape	Dates	Almond	Other fruit		Other agri.	Hard wheat	Soft wheat	Barley	Legume	Vegetable	Alfalfa	Olive	Grape	Dates	Almond	Other fruit	Other agri.	Average
24	Phosphates	0.4	0.3	0.4	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.2	-	0.66	0.3	0.2	0.3	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.1	-	
25	NonMetMin	0.3	0.2	0.3	0.3	0.2	0.3	0.2	0.2	0.2	0.3	0.3	-	0.22	0.1	0.0	0.1	0.1	0.0	0.1	0.0	0.0	0.0	0.1	0.1	-	
26	Met Min	-	-	-	-	-	-	-	-	-	-	-	-	0.71	-	-	-	-	-	-	-	-	-	-	-	-	
27	Crude petrol	1.9	1.2	1.9	2.2	1.9	4.5	2.2	2.1	2.1	1.6	1.5	0.3	0.44	0.8	0.5	0.8	1.0	0.8	2.0	1.0	0.9	0.9	0.7	0.7	0.1	
28	Refine petrol	2.7	1.7	2.7	2.5	2.2	3.3	2.8	2.7	2.7	3.0	2.9	0.1	0.45	1.2	0.8	1.2	1.1	1.0	1.5	1.3	1.2	1.2	1.4	1.3	0.0	
29	Electricity	0.7	0.4	0.7	0.8	0.7	1.7	0.8	0.8	0.8	0.4	0.6	0.1	0.89	0.6	0.4	0.6	0.7	0.6	1.5	0.7	0.7	0.7	0.4	0.5	0.1	
30	Ind Allm	0.2	0.1	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	-	0.10	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	-	
31	Other Ind Allm	0.1	0.1	0.1	0.1	0.1	0.7	0.1	0.1	0.1	0.1	0.1	-	0.23	0.0	0.0	0.0	0.0	0.2	0.0	0.0	0.0	0.0	0.0	0.0	-	
32	Bev. Tobac	0.6	0.4	0.6	0.6	0.5	0.7	0.6	0.6	0.6	0.7	0.7	-	0.69	0.4	0.3	0.4	0.4	0.3	0.5	0.4	0.4	0.4	0.5	0.5	-	
33	Textile	0.4	0.2	0.4	1.2	1.1	0.8	1.0	1.0	1.0	1.1	1.8	-	0.20	0.1	0.0	0.1	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.4	-	
34	Cloths	-	-	-	0.1	-	-	-	-	-	-	-	-	0.42	-	-	-	0.0	-	-	-	-	-	-	-	-	
35	Leather shoes	0.5	0.3	0.5	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	-	0.54	0.3	0.2	0.3	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	-	
36	Wood	0.3	0.2	0.3	0.6	0.5	0.4	1.3	1.3	1.3	0.6	0.5	-	0.40	0.1	0.1	0.1	0.2	0.2	0.2	0.5	0.5	0.5	0.2	0.2	-	
37	Paper	1.0	0.7	1.0	2.7	2.4	0.7	3.1	3.0	3.0	2.6	2.3	0.1	0.21	0.2	0.1	0.2	0.6	0.5	0.1	0.7	0.6	0.6	0.5	0.5	0.0	
38	Quarr Min	0.5	0.3	0.5	0.4	0.4	0.4	0.4	0.4	0.4	0.5	0.9	-	0.27	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.2	-	
39	Met Ind	0.4	0.2	0.4	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.6	-	0.20	0.1	0.0	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	-	
40	Met Obj	0.8	0.5	0.8	0.7	0.6	0.4	0.6	0.6	0.6	0.7	1.3	-	0.20	0.2	0.1	0.2	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.3	-	
41	Equipm	1.0	0.6	1.0	0.7	0.6	0.7	0.6	0.6	0.6	0.6	0.6	-	0.28	0.3	0.2	0.3	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	-	
42	Transp Mat	0.4	0.3	0.4	0.4	0.4	0.5	0.4	0.4	0.4	0.5	0.5	-	0.24	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	-	
43	Elect Mat	0.3	0.2	0.3	0.3	0.3	0.5	0.3	0.2	0.2	0.3	0.3	-	0.23	0.1	0.0	0.1	0.1	0.1	0.1	0.1	0.0	0.0	0.1	0.1	-	
44	Precinst	-	-	-	-	-	-	-	-	-	-	-	-	0.52	-	-	-	-	-	-	-	-	-	-	-	-	
45	Chemicals	4.6	3.0	4.6	3.9	3.5	3.2	3.6	3.6	3.6	3.8	2.8	0.2	0.19	0.9	0.6	0.9	0.7	0.7	0.6	0.7	0.7	0.7	0.7	0.5	0.0	
46	Rubber	0.3	0.2	0.3	0.7	0.6	1.5	0.6	0.6	0.6	0.7	0.8	0.1	0.29	0.1	0.1	0.1	0.2	0.2	0.4	0.2	0.2	0.2	0.2	0.2	0.0	
47	Other Ind	0.1	-	0.1	-	-	-	-	-	-	-	-	-	0.23	0.0	-	0.0	-	-	-	-	-	-	-	-	-	
48	Construct	0.7	0.5	0.7	0.6	0.5	0.7	0.5	0.5	0.5	0.7	2.0	-	0.35	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.7	-	
49	Commerce	-	-	-	-	-	-	-	-	-	-	-	-	0.61	-	-	-	-	-	-	-	-	-	-	-	-	
50	Banking	1.6	1.0	1.6	1.8	1.6	1.1	1.5	1.5	1.5	1.5	2.3	0.1	0.70	1.1	0.7	1.1	1.3	1.1	0.8	1.1	1.1	1.1	1.1	1.6	0.1	
51	Insurance	0.6	0.4	0.6	0.6	0.5	0.5	0.5	0.5	0.5	0.6	0.5	-	0.90	0.5	0.4	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	-	
52	Banking	4.5	2.9	4.5	3.4	3.0	1.8	3.1	3.0	3.0	3.2	2.9	0.1	0.51	2.3	1.5	2.3	1.7	1.5	0.9	1.6	1.5	1.5	1.6	1.5	0.1	
53	Insurance	0.8	0.5	0.8	0.6	0.5	0.5	0.4	0.4	0.4	0.6	0.5	-	0.02	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	-	
54	Oth Service	8.7	5.6	8.8	9.0	8.0	10.8	9.0	8.8	8.8	10.8	10.4	0.3	0.34	3.0	1.9	3.0	3.1	2.7	3.7	3.1	3.0	3.0	3.7	3.5	0.1	
55	Pub. Adm.	-	-	-	-	-	-	-	-	-	-	-	-	0.72	-	-	-	-	-	-	-	-	-	-	-	-	
	Total	34.4	22.0	34.5	35.2	31.1	36.7	34.6	33.9	33.9	35.9	37.7	1.4		13.1	8.4	13.2	13.2	11.6	14.3	12.9	12.7	12.7	13.1	13.9	0.6	11.6

Table XVIII.2.4.6: Coût Financier et économique des Projets(1/2)

Cost Item	F.C. (million DH)		L.C. (million DH)		Total financial cost (million DH)	Total economic cost (million DH)
	Financial cost	Economic cost	Financial cost	Economic cost		
N'fifikh (Upstream)						
1. Construction cost						
1.1 Dam and appurtenant facilities	93.0	93.0	50.1	43.1	143.1	136.1
1.2 Irrigation facilities	18.3	18.3	18.2	15.7	36.5	34.0
1.3 Water supply system	0.0	0.0	1.4	1.2	1.4	1.2
2. Resettlement cost	0.0	0.0	3.3	2.8	3.3	2.8
3. Engineering services cost	8.2	8.2	4.5	4.5	12.7	12.7
4. Administration cost	0.0	0.0	9.2	8.7	9.2	8.7
5. Physical contingency	12.0	12.0	8.7	7.6	20.7	19.6
Sub-total of (1.- 5.)	131.5	131.5	95.4	83.6	226.9	215.1
6. Price Contingency	25.7	0.0	18.6	0.0	44.3	0.0
Sub-total of (1.- 6.)	157.2	131.5	114.0	83.6	271.2	215.1
7. Value Added Tax	0.0	0.0	38.9	0.0	38.9	0.0
Total of (1.- 7.)	157.2	131.5	152.9	83.6	310.1	215.1
Taskourt						
1. Construction cost						
1.1 Dam and appurtenant facilities	179.0	179.0	96.4	82.9	275.4	261.9
1.2 Irrigation facilities	65.9	65.9	65.8	56.6	131.7	122.5
1.3 Water supply system	0.0	0.0	2.4	2.1	2.4	2.1
2. Resettlement cost	0.0	0.0	28.5	24.6	28.5	24.6
3. Engineering services cost	18.6	18.6	10.1	10.1	28.7	28.7
4. Administration cost	0.0	0.0	21.9	20.6	21.9	20.6
5. Physical contingency	26.4	26.4	22.5	19.7	48.9	46.1
Sub-total of (1.- 5.)	289.9	289.9	247.6	216.6	537.5	506.5
6. Price Contingency	55.8	0.0	45.2	0.0	101.0	0.0
Sub-total of (1.- 6.)	345.7	289.9	292.8	216.6	638.5	506.5
7. Value Added Tax	0.0	0.0	91.6	0.0	91.6	0.0
Total of (1.- 7.)	345.7	289.9	384.4	216.6	730.1	506.5
Timkit						
1. Construction cost						
1.1 Dam and appurtenant facilities	105.5	105.5	56.8	48.8	162.3	154.3
1.2 Irrigation facilities	56.2	56.2	56.1	48.2	112.3	104.4
2. Resettlement cost	0.0	0.0	6.4	5.5	6.4	5.5
3. Engineering services cost	12.5	12.5	6.7	6.7	19.2	19.2
4. Administration cost	0.0	0.0	14.0	13.2	14.0	13.2
5. Physical contingency	17.4	17.4	14.0	12.2	31.4	29.6
Sub-total of (1.- 5.)	191.6	191.6	154.0	134.6	345.6	326.2
6. Price Contingency	43.2	0.0	34.3	0.0	77.5	0.0
Sub-total of (1.- 6.)	234.8	191.6	188.3	134.6	423.1	326.2
7. Value Added Tax	0.0	0.0	60.8	0.0	60.8	0.0
Total of (1.- 7.)	234.8	191.6	249.1	134.6	483.9	326.2
Azghar						
1. Construction cost						
1.1 Dam and appurtenant facilities	73.1	73.1	39.4	33.9	112.5	107.0
1.2 Irrigation facilities	36.7	36.7	36.6	31.5	73.3	68.2
2. Resettlement cost	0.0	0.0	5.1	4.4	5.1	4.4
3. Engineering services cost	8.5	8.5	4.5	4.5	13.0	13.0
4. Administration cost	0.0	0.0	9.5	9.0	9.5	9.0
5. Physical contingency	11.8	11.8	9.5	8.3	21.3	20.1
Sub-total of (1.- 5.)	130.1	130.1	104.6	91.6	234.7	221.7
6. Price Contingency	25.9	0.0	20.4	0.0	46.3	0.0
Sub-total of (1.- 6.)	156.0	130.1	125.0	91.6	281.0	221.7
7. Value Added Tax	0.0	0.0	40.4	0.0	40.4	0.0
Total of (1.- 7.)	156.0	130.1	165.4	91.6	321.4	221.7

Table XVIII2.4.6: Coût Financier et économique des Projets (2/2)

Cost Item	F.C. (million DH)		L.C. (million DH)		Total financial cost (million DH)	Total economic cost (million DH)
	Financial cost	Economic cost	Financial cost	Economic cost		
TOTAL						
1. Construction cost						
1.1 Dam and appurtenant facilities	450.6	450.6	242.7	208.7	693.3	659.3
1.2 Irrigation facilities	177.1	177.1	176.7	152.0	353.8	329.1
1.3 Water supply system	0.0	0.0	3.8	3.3	3.8	3.3
2. Resettlement cost	0.0	0.0	43.3	37.3	43.3	37.3
3. Engineering services cost	47.8	47.8	25.8	25.8	73.6	73.6
4. Administration cost	0.0	0.0	54.6	51.5	54.6	51.5
5. Physical contingency	67.6	67.6	54.7	47.8	122.3	115.4
Sub-total of (1.- 5.)	743.1	743.1	601.6	526.4	1 344.7	1 269.5
6. Price Contingency	150.6	0.0	118.5	0.0	269.1	0.0
Sub-total of (1.- 6.)	893.7	743.1	720.1	526.4	1 613.8	1 269.5
7. Value Added Tax	0.0	0.0	231.7	0.0	231.7	0.0
Total of (1.- 7.)	893.7	743.1	951.8	526.4	1 845.5	1 269.5

Note: 1. Price level: as of April 2000, US\$1.0 = 10.68 DH, J. Yen100 = 9.90 DH

2. F.C. means foreign currency portion and L.C. means local currency portion

3. Engineering service fee is estimated as 7 % of total construction cost

4. Administration cost is estimated as 5 % of construction cost and resettlement cost.

5. Physical contingency: 10% of all items

6. Price contingency: 3% per annum for all items

7. Value added tax: 20% for engineering services and 14% for all other items

**Table XVIII.2.4.7: Dépression du coût annuel
(Economic Price, million DH)**

Cost Item	Year in Order								Total cost (million DH)
	1st	2nd	3rd	4th	5th	6th	7th	8th	
N'fikh (Upstream)									
1. Construction cost									
1.1 Dam and appurtenant facilities	-	32.7	69.4	34.0	-	-	-	-	136.1
1.2 Irrigation facilities	-	6.8	17.0	10.2	-	-	-	-	34.0
1.3 Water supply system	-	-	-	1.2	-	-	-	-	1.2
2. Resettlement cost	1.4	1.4	-	-	-	-	-	-	2.8
3. Engineering services cost	-	2.9	6.4	3.4	-	-	-	-	12.7
4. Administration cost	0.1	2.0	4.3	2.3	-	-	-	-	8.7
5. Physical contingency	0.2	4.6	9.7	5.1	-	-	-	-	19.6
Total of (1.- 5.)	1.7	50.4	106.8	56.2	-	-	-	-	215.1
Taskourt									
1. Construction cost									
1.1 Dam and appurtenant facilities	-	28.8	60.2	86.4	86.5	-	-	-	261.9
1.2 Irrigation facilities	-	-	24.5	61.3	36.7	-	-	-	122.5
1.3 Water supply system	-	-	-	-	2.1	-	-	-	2.1
2. Resettlement cost	12.3	12.3	-	-	-	-	-	-	24.6
3. Engineering services cost	-	2.1	6.3	11.0	9.3	-	-	-	28.7
4. Administration cost	0.6	2.1	4.2	7.4	6.3	-	-	-	20.6
5. Physical contingency	1.3	4.5	9.5	16.6	14.2	-	-	-	46.1
Total of (1.- 5.)	14.2	49.8	104.7	182.7	155.1	-	-	-	506.5
Timkit									
1. Construction cost									
1.1 Dam and appurtenant facilities	-	26.2	33.9	50.9	43.3	-	-	-	154.3
1.2 Irrigation facilities	-	-	20.9	52.2	31.3	-	-	-	104.4
2. Resettlement cost	2.8	2.7	-	-	-	-	-	-	5.5
3. Engineering services cost	-	2.0	4.0	7.7	5.5	-	-	-	19.2
4. Administration cost	0.1	1.4	2.7	5.2	3.8	-	-	-	13.2
5. Physical contingency	0.3	3.2	6.2	11.6	8.3	-	-	-	29.6
Total of (1.- 5.)	3.2	35.5	67.7	127.6	92.2	-	-	-	326.2
Azghar									
1. Construction cost									
1.1 Dam and appurtenant facilities	-	25.7	40.7	40.6	-	-	-	-	107.0
1.2 Irrigation facilities	-	13.6	34.1	20.5	-	-	-	-	68.2
2. Resettlement cost	2.2	2.2	-	-	-	-	-	-	4.4
3. Engineering services cost	-	2.9	5.5	4.6	-	-	-	-	13.0
4. Administration cost	0.1	2.1	3.7	3.1	-	-	-	-	9.0
5. Physical contingency	0.2	4.7	8.4	6.8	-	-	-	-	20.1
Total of (1.- 5.)	2.5	51.2	92.4	75.6	-	-	-	-	221.7
Overall Plan									
1. Construction cost									
1.1 Dam and appurtenant facilities	-	-	-	28.8	144.8	230.4	212.0	43.3	659.3
1.2 Irrigation facilities	-	-	-	-	44.9	133.3	119.6	31.3	329.1
1.3 Water supply system	-	-	-	-	-	-	3.3	-	3.3
2. Resettlement cost	-	-	12.3	18.7	6.3	-	-	-	37.3
3. Engineering services cost	-	-	-	2.1	14.1	26.9	25.0	5.5	73.6
4. Administration cost	-	-	0.6	2.4	9.7	18.1	16.9	3.8	51.5
5. Physical contingency	-	-	1.3	5.2	22.0	40.9	37.7	8.3	115.4
Total of (1.- 5.)	-	-	14.2	57.2	241.8	449.6	414.5	92.2	1 269.5

Table XVIII.2.4.8: Analyse coût-bénéfice des projets prioritaires (1/10)

N'fifikh - Upstream											Unit: million DH									
Year in order	Year	Benefit					Cost										Net Cash Flow			
		Agri-culture	Flood & erosion control	water supply	Other direct benefit	Total Benefit	Dam	Irrigation	Water supply	Investment	Resettle-ment	Engr. services	Adminis-tration	Physical contingency	Sub-total	O/M		Replace-ment	Total Cost	
1	2001	0.0	0.00	0.00	0.00	0.0	0.0	0.0		1.4		0.1	0.2	1.7	0.0	1.7	-1.7			
2	2002	0.0	0.00	0.00	0.00	0.0	32.7	6.8		1.4	2.9	2.0	4.6	50.4	0.0	50.4	-50.4			
3	2003	0.0	0.00	0.00	0.00	0.0	69.4	17.0			6.4	4.3	9.7	106.8	0.0	106.8	-106.8			
4	2004	0.0	0.00	0.00	0.00	0.0	34.0	10.2	1.2		3.4	2.3	5.1	56.2	0.0	56.2	-56.2			
5	2005	8.5	0.12	0.14	0.88	9.6								0.0	1.6	1.6	8.1			
6	2006	11.5	0.12	0.15	1.18	12.9								0.0	1.6	1.6	11.4			
7	2007	14.3	0.12	0.15	1.46	16.1								0.0	1.6	1.6	14.5			
8	2008	14.3	0.12	0.15	1.46	16.1								0.0	1.6	1.6	14.5			
9	2009	15.4	0.12	0.15	1.57	17.2								0.0	1.6	1.6	15.7			
10	2010	15.6	0.12	0.15	1.58	17.4								0.0	1.6	1.6	15.9			
11	2011	16.6	0.12	0.15	1.69	18.6								0.0	1.6	1.6	17.0			
12	2012	17.7	0.12	0.15	1.80	19.8								0.0	1.6	1.6	18.2			
13	2013	17.7	0.12	0.15	1.80	19.8								0.0	1.6	1.6	18.2			
14	2014	17.7	0.12	0.15	1.80	19.8								0.0	1.6	1.6	18.2			
15	2015	17.7	0.12	0.16	1.80	19.8								0.0	1.6	1.6	18.2			
16	2016	17.7	0.12	0.16	1.80	19.8								0.0	1.6	1.6	18.2			
17	2017	17.7	0.12	0.16	1.80	19.8								0.0	1.6	1.6	18.2			
18	2018	17.7	0.12	0.16	1.80	19.8								0.0	1.6	1.6	18.2			
19	2019	17.7	0.12	0.16	1.80	19.8								0.0	1.6	1.6	18.2			
20	2020	17.7	0.12	0.16	1.80	19.8								0.0	1.6	1.6	18.2			
21	2021	17.7	0.12	0.16	1.80	19.8								0.0	1.6	1.6	18.2			
22	2022	17.7	0.12	0.16	1.80	19.8								0.0	1.6	1.6	18.2			
23	2023	17.7	0.12	0.16	1.80	19.8								0.0	1.6	1.6	18.2			
24	2024	17.7	0.12	0.16	1.80	19.8								0.0	1.6	1.6	18.2			
25	2025	17.7	0.12	0.16	1.80	19.8								0.0	1.6	1.6	18.2			
26	2026	17.7	0.12	0.16	1.80	19.8								0.0	1.6	1.6	18.2			
27	2027	17.7	0.12	0.16	1.80	19.8								0.0	1.6	1.6	18.2			
28	2028	17.7	0.12	0.16	1.80	19.8								0.0	1.6	1.6	18.2			
29	2029	17.7	0.12	0.16	1.80	19.8								0.0	1.6	1.6	18.2			
30	2030	17.7	0.12	0.16	1.80	19.8								0.0	1.6	1.6	18.2			
31	2031	17.7	0.12	0.16	1.80	19.8								0.0	1.6	1.6	18.2			
32	2032	17.7	0.12	0.16	1.80	19.8								0.0	1.6	1.6	18.2			
33	2033	17.7	0.12	0.16	1.80	19.8								0.0	1.6	1.6	18.2			
34	2034	17.7	0.12	0.16	1.80	19.8								0.0	1.6	1.6	18.2			
35	2035	17.7	0.12	0.16	1.80	19.8								0.0	1.6	1.6	18.2			
36	2036	17.7	0.12	0.16	1.80	19.8								0.0	1.6	1.6	18.2			
37	2037	17.7	0.12	0.16	1.80	19.8								0.0	1.6	1.6	18.2			
38	2038	17.7	0.12	0.16	1.80	19.8								0.0	1.6	1.6	18.2			
39	2039	17.7	0.12	0.16	1.80	19.8								0.0	1.6	1.6	18.2			
40	2040	17.7	0.12	0.16	1.80	19.8								0.0	1.6	1.6	18.2			
41	2041	17.7	0.12	0.16	1.80	19.8								0.0	1.6	1.6	18.2			
42	2042	17.7	0.12	0.16	1.80	19.8								0.0	1.6	1.6	18.2			
43	2043	17.7	0.12	0.16	1.80	19.8								0.0	1.6	1.6	18.2			
44	2044	17.7	0.12	0.16	1.80	19.8								0.0	1.6	1.6	18.2			
45	2045	17.7	0.12	0.16	1.80	19.8								0.0	1.6	1.6	18.2			
46	2046	17.7	0.12	0.16	1.80	19.8								0.0	1.6	1.6	18.2			
47	2047	17.7	0.12	0.16	1.80	19.8								0.0	1.6	1.6	18.2			
48	2048	17.7	0.12	0.16	1.80	19.8								0.0	1.6	1.6	18.2			
49	2049	17.7	0.12	0.16	1.80	19.8								0.0	1.6	1.6	18.2			
50	2050	17.7	0.12	0.16	1.80	19.8								0.0	1.6	1.6	18.2			
51	2051	17.7	0.12	0.16	1.80	19.8								0.0	1.6	1.6	18.2			
52	2052	17.7	0.12	0.16	1.80	19.8								0.0	1.6	1.6	18.2			
53	2053	17.7	0.12	0.16	1.80	19.8								0.0	1.6	1.6	18.2			
54	2054	17.7	0.12	0.16	1.80	19.8								0.0	1.6	1.6	18.2			
EIRR=		6.8%																		
B/C =		0.86 (at discount rate: 8%)																		
NPV=		-26.6 (at discount rate: 8%)																		
NPV=		24.0 (at discount rate: 6%)																		
NPV=		-55.4 (at discount rate: 10%)																		
NPV=		-72.1 (at discount rate: 12%)																		

Table XVIII.2.4.8: Analyse coût-bénéfice des projets prioritaires (2/10)

N'fifikh - Upstream (including Indirect Benefit)											Unit: million DH									
Year in order	Year	Benefit					Cost										Net Cash Flow			
		Agri-culture	Flood & erosion control	water supply	Other direct benefit	Indirect Benefit	Total Benefit	Dam	Irrigation	Water supply	Investment	Engr. services	Adminis-tration	Physical contingency	Sub-total	O/M		Replace-ment	Total Cost	
1	2001	0.0				0.0	0.0	0.0		1.4		0.1	0.2	1.7	0.0	1.7	-1.7			
2	2002	0.0				16.1	16.1	32.7	6.8	1.4	2.9	2.0	4.6	50.4	0.0	50.4	-34.3			
3	2003	0.0				35.2	35.2	69.4	17.0		6.4	4.3	9.7	106.8	0.0	106.8	-71.6			
4	2004	0.0				18.5	18.5	34.0	10.2	1.2	3.4	2.3	5.1	56.2	0.0	56.2	-37.7			
5	2005	8.5	0.12	0.14	0.88	0.4	10.0							0.0	1.6	1.6	8.5			
6	2006	11.5	0.12	0.15	1.18	0.4	13.3							0.0	1.6	1.6	11.8			
7	2007	14.3	0.12	0.15	1.46	0.4	16.5							0.0	1.6	1.6	14.9			
8	2008	14.3	0.12	0.15	1.46	0.4	16.5							0.0	1.6	1.6	14.9			
9	2009	15.4	0.12	0.15	1.57	0.4	17.6							0.0	1.6	1.6	16.1			
10	2010	15.6	0.12	0.15	1.58	0.4	17.8							0.0	1.6	1.6	16.3			
11	2011	16.6	0.12	0.15	1.69	0.4	19.0							0.0	1.6	1.6	17.4			
12	2012	17.7	0.12	0.15	1.80	0.4	20.2							0.0	1.6	1.6	18.6			
13	2013	17.7	0.12	0.15	1.80	0.4	20.2							0.0	1.6	1.6	18.6			
14	2014	17.7	0.12	0.15	1.80	0.4	20.2							0.0	1.6	1.6	18.6			
15	2015	17.7	0.12	0.16	1.80	0.4	20.2							0.0	1.6	1.6	18.6			
16	2016	17.7	0.12	0.16	1.80	0.4	20.2							0.0	1.6	1.6	18.6			
17	2017	17.7	0.12	0.16	1.80	0.4	20.2							0.0	1.6	1.6	18.6			
18	2018	17.7	0.12	0.16	1.80	0.4	20.2							0.0	1.6	1.6	18.6			
19	2019	17.7	0.12	0.16	1.80	0.4	20.2							0.0	1.6	1.6	18.6			
20	2020	17.7	0.12	0.16	1.80	0.4	20.2							0.0	1.6	1.6	18.6			
21	2021	17.7	0.12	0.16	1.80	0.4	20.2							0.0	1.6	1.6	18.6			
22	2022	17.7	0.12	0.16	1.80	0.4	20.2							0.0	1.6	1.6	18.6			
23	2023	17.7	0.12	0.16	1.80	0.4	20.2							0.0	1.6	1.6	18.6			
24	2024	17.7	0.12	0.16	1.80	0.4	20.2							0.0	1.6	1.6	18.6			
25	2025	17.7	0.12	0.16	1.80	0.4	20.2							0.0	1.6	1.6	18.6			
26	2026	17.7	0.12	0.16	1.80	0.4	20.2							0.0	1.6	1.6	18.6			
27	2027	17.7	0.12	0.16	1.80	0.4	20.2							0.0	1.6	1.6	18.6			
28	2028	17.7	0.12	0.16	1.80	0.4	20.2							0.0	1.6	1.6	18.6			
29	2029	17.7	0.12	0.16	1.80	0.4	20.2							0.0	1.6	1.6	18.6			
30	2030	17.7	0.12	0.16	1.80	0.4	20.2							0.0	1.6	1.6	18.6			
31	2031	17.7	0.12	0.16	1.80	0.4	20.2							0.0	1.6	1.6	18.6			
32	2032	17.7	0.12	0.16	1.80	0.4	20.2							0.0	1.6	1.6	18.6			
33	2033	17.7	0.12	0.16	1.80	0.4	20.2							0.0	1.6	1.6	18.6			
34	2034	17.7	0.12	0.16	1.80	0.4	20.2							0.0	1.6	1.6				

Table XVIII.2.4.8: Analyse coût-bénéfice des projets prioritaires (3/10)

Taskourt		Unit: million DH																		
Year in order	Year	Benefit					Cost										O/M	Replace-ment	Total Cost	Net Cash Flow
		Agri-culture	Flood & erosion control	water supply	Other direct benefit	Total Benefit	Dam	Irrigation	Water supply	Resettle-ment	Engr. services	Adminis-tration	Physical cosanguency	Sub-total						
1	2001	0.0			0.0	0.0	0.0	0.0	12.3		0.6	1.3	14.2	0.0		14.2	-14.2			
2	2002	0.0			0.0	0.0	28.8	0.0	12.3		2.1	4.5	49.8	0.0		49.8	-49.8			
3	2003	0.0			0.0	0.0	60.2	24.5			6.3	4.2	9.5	104.7	0.0	104.7	-104.7			
4	2004	0.0			0.0	0.0	86.4	61.3			11.0	7.4	16.6	182.7	0.0	182.7	-182.7			
5	2005	0.0			0.0	0.0	86.5	36.7	2.1		9.3	6.3	14.2	155.1	0.0	155.1	-155.1			
6	2006	25.8	0.397	0.254	2.6	29.1								0.0	4.2	24.9	4.2			
7	2007	34.6	0.397	0.256	3.5	38.8								0.0	4.2	34.6	4.2			
8	2008	40.7	0.397	0.258	4.1	45.4								0.0	4.2	41.2	4.2			
9	2009	45.7	0.397	0.259	4.6	51.0								0.0	4.2	46.8	4.2			
10	2010	49.1	0.397	0.261	5.0	54.7								0.0	4.2	50.5	4.2			
11	2011	49.1	0.397	0.263	5.0	54.7								0.0	4.2	50.5	4.2			
12	2012	49.1	0.397	0.265	5.0	54.7								0.0	4.2	50.5	4.2			
13	2013	49.1	0.397	0.267	5.0	54.7								0.0	4.2	50.5	4.2			
14	2014	49.1	0.397	0.269	5.0	54.7								0.0	4.2	50.5	4.2			
15	2015	49.1	0.397	0.270	5.0	54.7								0.0	4.2	50.5	4.2			
16	2016	49.1	0.397	0.272	5.0	54.7								0.0	4.2	50.5	4.2			
17	2017	49.1	0.397	0.274	5.0	54.7								0.0	4.2	50.5	4.2			
18	2018	49.1	0.397	0.276	5.0	54.8								0.0	4.2	50.5	4.2			
19	2019	49.1	0.397	0.278	5.0	54.8								0.0	4.2	50.5	4.2			
20	2020	49.1	0.397	0.280	5.0	54.8								0.0	4.2	50.5	4.2			
21	2021	49.1	0.397	0.280	5.0	54.8								0.0	4.2	50.5	4.2			
22	2022	49.1	0.397	0.280	5.0	54.8								0.0	4.2	50.5	4.2			
23	2023	49.1	0.397	0.280	5.0	54.8								0.0	4.2	50.5	4.2			
24	2024	49.1	0.397	0.280	5.0	54.8								0.0	4.2	50.5	4.2			
25	2025	49.1	0.397	0.280	5.0	54.8								0.0	4.2	50.5	4.2			
26	2026	49.1	0.397	0.280	5.0	54.8								0.0	4.2	50.5	4.2			
27	2027	49.1	0.397	0.280	5.0	54.8								0.0	4.2	50.5	4.2			
28	2028	49.1	0.397	0.280	5.0	54.8								0.0	4.2	50.5	4.2			
29	2029	49.1	0.397	0.280	5.0	54.8								0.0	4.2	50.5	4.2			
30	2030	49.1	0.397	0.280	5.0	54.8								0.0	4.2	50.5	4.2			
31	2031	49.1	0.397	0.280	5.0	54.8								0.0	4.2	50.5	4.2			
32	2032	49.1	0.397	0.280	5.0	54.8								0.0	4.2	50.5	4.2			
33	2033	49.1	0.397	0.280	5.0	54.8								0.0	4.2	50.5	4.2			
34	2034	49.1	0.397	0.280	5.0	54.8								0.0	4.2	50.5	4.2			
35	2035	49.1	0.397	0.280	5.0	54.8								0.0	4.2	50.5	4.2			
36	2036	49.1	0.397	0.280	5.0	54.8								0.0	4.2	50.5	4.2			
37	2037	49.1	0.397	0.280	5.0	54.8								0.0	4.2	50.5	4.2			
38	2038	49.1	0.397	0.280	5.0	54.8								0.0	4.2	50.5	4.2			
39	2039	49.1	0.397	0.280	5.0	54.8								0.0	4.2	50.5	4.2			
40	2040	49.1	0.397	0.280	5.0	54.8								0.0	4.2	50.5	4.2			
41	2041	49.1	0.397	0.280	5.0	54.8								0.0	4.2	50.5	4.2			
42	2042	49.1	0.397	0.280	5.0	54.8								0.0	4.2	50.5	4.2			
43	2043	49.1	0.397	0.280	5.0	54.8								0.0	4.2	50.5	4.2			
44	2044	49.1	0.397	0.280	5.0	54.8								0.0	4.2	50.5	4.2			
45	2045	49.1	0.397	0.280	5.0	54.8								0.0	4.2	50.5	4.2			
46	2046	49.1	0.397	0.280	5.0	54.8								0.0	4.2	50.5	4.2			
47	2047	49.1	0.397	0.280	5.0	54.8								0.0	4.2	50.5	4.2			
48	2048	49.1	0.397	0.280	5.0	54.8								0.0	4.2	50.5	4.2			
49	2049	49.1	0.397	0.280	5.0	54.8								0.0	4.2	50.5	4.2			
50	2050	49.1	0.397	0.280	5.0	54.8								0.0	4.2	50.5	4.2			
51	2051	49.1	0.397	0.280	5.0	54.8								0.0	4.2	50.5	4.2			
52	2052	49.1	0.397	0.280	5.0	54.8								0.0	4.2	50.5	4.2			
53	2053	49.1	0.397	0.280	5.0	54.8								0.0	4.2	50.5	4.2			
54	2054	49.1	0.397	0.280	5.0	54.8								0.0	4.2	50.5	4.2			
55	2055	49.1	0.397	0.280	5.0	54.8								0.0	4.2	50.5	4.2			
EIRR=		8.1%																		
B/C =		1.02 (at discount rate: 8%)																		
NPV=		6.5 (at discount rate: 8%)																		
NPV=		146.9 (at discount rate: 6%)																		
NPV=		-73.1 (at discount rate: 10%)																		
NPV=		-119.3 (at discount rate: 12%)																		

Table XVIII.2.4.8: Analyse coût-bénéfice des projets prioritaires (4/10)

Taskourt (including Indirect Benefit)		Unit: million DH																		
Year in order	Year	Benefit					Cost										O/M	Replace-ment	Total Cost	Net Cash Flow
		Agri-culture	Flood & erosion control	water supply	Other direct benefit	Indirect Benefit	Total Benefit	Dam	Irrigation	Water supply	Resettle-ment	Engr. services	Adminis-tration	Physical cosanguency	Sub-total					
1	2001	0.0			0.0	0.0	0.0	0.0	12.3		0.6	1.3	14.2	0.0		14.2	-14.2			
2	2002	0.0			0.0	11.7	11.7	28.8	0.0						0.0	49.8	-38.1			
3	2003	0.0			0.0	34.5	34.5	60.2	24.5						0.0	104.7	-70.2			
4	2004	0.0			0.0	60.1	60.1	86.4	61.3						0.0	182.7	-122.6			
5	2005	0.0			0.0	51.0	51.0	86.5	36.7	2.1					0.0	155.1	-104.1			
6	2006	25.8	0.397	0.254	2.6	29.1								0.0	4.2	24.9	4.2			
7	2007	34.6	0.397	0.256	3.5	38.8								0.0	4.2	34.6	4.2			
8	2008	40.7	0.397	0.258	4.1	45.4								0.0	4.2	41.2	4.2			
9	2009	45.7	0.397	0.259	4.6	51.0								0.0	4.2	46.8	4.2			
10	2010	49.1	0.397	0.261	5.0	54.7								0.0	4.2	50.5	4.2			
11	2011	49.1	0.397	0.263	5.0	54.7								0.0	4.2	50.5	4.2			
12	2012	49.1	0.397	0.265	5.0	54.7								0.0	4.2	50.5	4.2			
13	2013	49.1	0.397	0.267	5.0	54.7								0.0	4.2	50.5	4.2			
14	2014	49.1	0.397	0.269	5.0	54.7								0.0	4.2	50.5	4.2			
15	2015	49.1	0.397	0.270	5.0	54.7								0.0	4.2	50.5	4.2			
16	2016	49.1	0.397	0.272	5.0	54.7								0.0	4.2	50.5	4.2			
17	2017	49.1	0.397	0.274	5.0	54.7								0.0	4.2	50.5	4.2			
18	2018	49.1	0.397	0.276	5.0	54.8								0.0	4.2	50.5	4.2			
19	2019	49.1	0.397	0.278	5.0	54.8								0.0	4.2	50.5	4.2			
20	2020	49.1	0.397	0.280	5.0	54.8								0.0	4.2	50.5	4.2			
21	2021	49.1	0.397	0.280	5.0	54.8								0.0	4.2	50.5	4.2			
22	2022	49.1	0.397	0.280	5.0	54.8								0.0	4.2	50.5	4.2			
23	2023	49.1	0.397	0.280	5.0	54.8								0.0	4.2	50.5	4.2			
24	2024	49.1	0.397	0.280	5.0	54.8								0.0	4.2	50.5	4.2			
25	2025	49.1	0.397	0.280	5.0	54.8								0.0	4.2	50.5	4.2			
26	2026	49.1	0.397	0.280	5.0	54.8								0.0	4.2	50.5	4.2			
27	2027	49.1	0.397	0.280	5.0	54.8								0.0	4.2	50.5	4.2			
28	2028	49.1	0.397	0.280	5.0	54.8								0.0	4.2	50.5	4.2			
29	2029	49.1	0.397	0.280	5.0	54.8								0.0	4.2	50.5	4.2			
30	2030	49.1	0.397	0.280	5.0	54.8								0.0	4.2	50.5	4.2			
31	2031	49.1	0.397	0.280	5.0	54.8								0.0	4.2	50.5	4.2			
32	2032	49.1	0.397	0.280	5.0	54.8								0.0	4.2	50.5	4.2			
33	2033	49.1	0.397	0.280	5.0	54.8								0.0	4.2	50.5	4.2			
34	2034	49.1	0.397	0.280	5.0	54.8														

Table XVIII.2.4.8: Analyse coût-bénéfice des projets prioritaires (5/10)

Year in order		Benefit										Cost										Net Cash Flow
Year	Order	Agri-culture	Flood & erosion control	Other direct benefit	Total Benefit	Dam	Irrigation	Resettle-ment	Investment Engr. services	Adminis-tration	Physical coningency	Sub-total	O/M	Replace-ment	Total Cost	Net Cash Flow						
1	2001	0.0		0.0	0.0	0.0	0.0	2.8	0.1	0.3	3.2	0.0		3.2	-3.2							
2	2002	0.0		0.0	0.0	26.2	0.0	2.7	2.0	1.4	3.2	35.5	0.0		35.5	-35.5						
3	2003	0.0		0.0	0.0	33.9	20.9		4.0	2.7	6.2	67.7	0.0		67.7	-67.7						
4	2004	0.0		0.0	0.0	50.9	52.2		7.7	5.2	11.6	127.6	0.0		127.6	-127.6						
5	2005	0.0		0.0	0.0	43.3	31.3		5.5	3.8	8.3	92.2	0.0		92.2	-92.2						
6	2006	15.6	0.5	1.6	17.8							0.0	3.5		3.5	14.3						
7	2007	21.7	0.5	2.2	24.4							0.0	3.5		3.5	20.9						
8	2008	25.2	0.5	2.6	28.3							0.0	3.5		3.5	24.8						
9	2009	27.1	0.5	2.8	30.4							0.0	3.5		3.5	26.9						
10	2010	28.1	0.5	2.9	31.5							0.0	3.5		3.5	28.0						
11	2011	28.1	0.5	2.9	31.5							0.0	3.5		3.5	28.0						
12	2012	28.1	0.5	2.9	31.5							0.0	3.5		3.5	28.0						
13	2013	28.1	0.5	2.9	31.5							0.0	3.5		3.5	28.0						
14	2014	28.1	0.5	2.9	31.5							0.0	3.5		3.5	28.0						
15	2015	28.1	0.5	2.9	31.5							0.0	3.5		3.5	28.0						
16	2016	28.1	0.5	2.9	31.5							0.0	3.5		3.5	28.0						
17	2017	28.1	0.5	2.9	31.5							0.0	3.5		3.5	28.0						
18	2018	28.1	0.5	2.9	31.5							0.0	3.5		3.5	28.0						
19	2019	28.1	0.5	2.9	31.5							0.0	3.5		3.5	28.0						
20	2020	28.1	0.5	2.9	31.5							0.0	3.5		3.5	28.0						
21	2021	28.1	0.5	2.9	31.5							0.0	3.5		3.5	28.0						
22	2022	28.1	0.5	2.9	31.5							0.0	3.5		3.5	28.0						
23	2023	28.1	0.5	2.9	31.5							0.0	3.5		3.5	28.0						
24	2024	28.1	0.5	2.9	31.5							0.0	3.5		3.5	28.0						
25	2025	28.1	0.5	2.9	31.5							0.0	3.5		3.5	28.0						
26	2026	28.1	0.5	2.9	31.5							0.0	3.5		3.5	28.0						
27	2027	28.1	0.5	2.9	31.5							0.0	3.5		3.5	28.0						
28	2028	28.1	0.5	2.9	31.5							0.0	3.5		3.5	28.0						
29	2029	28.1	0.5	2.9	31.5							0.0	3.5		3.5	28.0						
30	2030	28.1	0.5	2.9	31.5							0.0	3.5	20.0	23.5	8.0						
31	2031	28.1	0.5	2.9	31.5							0.0	3.5		3.5	28.0						
32	2032	28.1	0.5	2.9	31.5							0.0	3.5		3.5	28.0						
33	2033	28.1	0.5	2.9	31.5							0.0	3.5		3.5	28.0						
34	2034	28.1	0.5	2.9	31.5							0.0	3.5		3.5	28.0						
35	2035	28.1	0.5	2.9	31.5							0.0	3.5		3.5	28.0						
36	2036	28.1	0.5	2.9	31.5							0.0	3.5		3.5	28.0						
37	2037	28.1	0.5	2.9	31.5							0.0	3.5		3.5	28.0						
38	2038	28.1	0.5	2.9	31.5							0.0	3.5		3.5	28.0						
39	2039	28.1	0.5	2.9	31.5							0.0	3.5		3.5	28.0						
40	2040	28.1	0.5	2.9	31.5							0.0	3.5		3.5	28.0						
41	2041	28.1	0.5	2.9	31.5							0.0	3.5		3.5	28.0						
42	2042	28.1	0.5	2.9	31.5							0.0	3.5		3.5	28.0						
43	2043	28.1	0.5	2.9	31.5							0.0	3.5		3.5	28.0						
44	2044	28.1	0.5	2.9	31.5							0.0	3.5		3.5	28.0						
45	2045	28.1	0.5	2.9	31.5							0.0	3.5		3.5	28.0						
46	2046	28.1	0.5	2.9	31.5							0.0	3.5		3.5	28.0						
47	2047	28.1	0.5	2.9	31.5							0.0	3.5		3.5	28.0						
48	2048	28.1	0.5	2.9	31.5							0.0	3.5		3.5	28.0						
49	2049	28.1	0.5	2.9	31.5							0.0	3.5		3.5	28.0						
50	2050	28.1	0.5	2.9	31.5							0.0	3.5		3.5	28.0						
51	2051	28.1	0.5	2.9	31.5							0.0	3.5		3.5	28.0						
52	2052	28.1	0.5	2.9	31.5							0.0	3.5		3.5	28.0						
53	2053	28.1	0.5	2.9	31.5							0.0	3.5		3.5	28.0						
54	2054	28.1	0.5	2.9	31.5							0.0	3.5		3.5	28.0						
55	2055	28.1	0.5	2.9	31.5							0.0	3.5		3.5	28.0						

EIRR= 7.1%
 B/C = 0.90 (at discount rate: 8%)
 NPV= -27.6 (at discount rate: 8%)
 NPV= 47.9 (at discount rate: 6%)
 NPV= -69.6 (at discount rate: 10%)
 NPV= -93.3 (at discount rate: 12%)

Table XVIII.2.4.8: Analyse coût-bénéfice des projets prioritaires (6/10)

Year in order		Benefit										Cost										Net Cash Flow
Year	Order	Agri-culture	Flood & erosion control	Other direct benefit	Indirect Benefit	Total Benefit	Dam	Irrigation	Resettle-ment	Investment Engr. services	Adminis-tration	Physical coningency	Sub-total	O/M	Replace-ment	Total Cost	Net Cash Flow					
1	2001	0.0		0.0	0.0	0.0	0.0	0.0	2.8	0.1	0.3	3.2	0.0		3.2	-3.2						
2	2002	0.0		0.0	10.7	10.7	26.2	0.0	2.7	2.0	1.4	3.2	35.5	0.0		35.5	-24.8					
3	2003	0.0		0.0	22.3	22.3	33.9	20.9	4.0	2.7	6.2	67.7	0.0		67.7	-45.4						
4	2004	0.0		0.0	42.0	42.0	50.9	52.2	7.7	5.2	11.6	127.6	0.0		127.6	-85.6						
5	2005	0.0		0.0	30.4	30.4	43.3	31.3	5.5	3.8	8.3	92.2	0.0		92.2	-61.8						
6	2006	15.6	0.5	1.6	0.7	18.5						0.0	3.5		3.5	15.0						
7	2007	21.7	0.5	2.2	0.7	25.1						0.0	3.5		3.5	21.6						
8	2008	25.2	0.5	2.6	0.7	29.0						0.0	3.5		3.5	25.5						
9	2009	27.1	0.5	2.8	0.7	31.1						0.0	3.5		3.5	27.6						
10	2010	28.1	0.5	2.9	0.7	32.2						0.0	3.5		3.5	28.7						
11	2011	28.1	0.5	2.9	0.7	32.2						0.0	3.5		3.5	28.7						
12	2012	28.1	0.5	2.9	0.7	32.2						0.0	3.5		3.5	28.7						
13	2013	28.1	0.5	2.9	0.7	32.2						0.0	3.5		3.5	28.7						
14	2014	28.1	0.5	2.9	0.7	32.2						0.0	3.5		3.5	28.7						
15	2015	28.1	0.5	2.9	0.7	32.2						0.0	3.5		3.5	28.7						
16	2016	28.1	0.5	2.9	0.7	32.2						0.0	3.5		3.5	28.7						
17	2017	28.1	0.5	2.9	0.7	32.2						0.0	3.5		3.5	28.7						
18	2018	28.1	0.5	2.9	0.7	32.2						0.0	3.5		3.5	28.7						
19	2019	28.1	0.5	2.9	0.7	32.2						0.0	3.5		3.5	28.7						
20	2020	28.1	0.5	2.9	0.7	32.2						0.0	3.5		3.5	28.7						
21	2021	28.1	0.5	2.9	0.7	32.2						0.0	3.5		3.5	28.7						
22	2022	28.1	0.5	2.9	0.7	32.2						0.0	3.5		3.5	28.7						
23	2023	28.1	0.5	2.9	0.7	32.2						0.0	3.5		3.5	28.7						
24	2024	28.1	0.5	2.9	0.7	32.2						0.0	3.5		3.5	28.7						
25	2025	28.1	0.5	2.9	0.7	32.2						0.0	3.5		3.5	28.7						
26	2026	28.1	0.5	2.9	0.7	32.2						0.0	3.5		3.5	28.7						
27	2027	28.1	0.5	2.9	0.7	32.2						0.0	3.5		3.5	28.7						
28	2028	28.1	0.5	2.9	0.7	32.2						0.0	3.5		3.5	28.7						
29	2029	28.1	0.5	2.9	0.7	32.2						0.0	3.5		3.5	28.7						
30	2030	28.1	0.5	2.9	0.7	32.2						0.0	3.5	20.0	23.5	8.7						
31	2031	28.1	0.5	2.9	0.7	32.2						0.0	3.5		3.5	28.7						
32	2032	28.1	0.5	2.9	0.7	32.2						0.0	3.5		3.5	28.7						
33	2033	28.1	0.5	2.9	0.7	32.2						0.0	3.5		3.5	28.7						
34	2034	28.1	0.5	2.9	0.7	32.2						0.0	3.5		3.5	28.7						
35	2035	28.1	0.5	2.9	0.7	32.2						0.0	3.5		3.5	28.7						
36	2036	28.1	0.5	2.9	0.7	32.2						0.0	3.5		3.5	28.7						
37	2037	28.1	0.5	2.9	0.7	32.2						0.0	3.5		3.5	28.7						
38	2038	28.1	0.5	2.9	0.7	32.2						0.0	3.5		3.5	28.7						
39	2039	28.1	0.5	2.9	0.7	32.2						0.0	3.5		3.5	28.7						
40	2040	28.1	0.5	2.9	0.7	32.2						0.0	3.5		3.5	28.7						
41	2041	28.1	0.5	2.9	0.7	32.2						0.0	3.5		3.5	28.7						
42	2042	28.1	0.5	2.9	0.7	32.2																

Table XVIII.2.4.8: Analyse coût-bénéfice des projets prioritaires (7/10)

Azghar		Unit: million DH																			
Year in order	Year	Benefit					Cost										O/M	Replace-ment	Total Cost	Net Cash Flow	
		Agri-culture	Flood & erosion control	Other direct benefit	Neg. benefit to downstream reservoir	Total Benefit	Dam	Irrigation	Resettle-ment	Engr. services	Adminis-tration	Physical contingency	Sub-total	Engr. services	Adminis-tration	Physical contingency					Sub-total
1	2001	0.0	0.00	0.0	0.0	0.0	0.0	0.0	2.2	0.1	0.2	2.5	0.0				2.5	-2.5			
2	2002	0.0	0.00	0.0	0.0	0.0	0.0	25.7	13.6	2.2	2.9	2.1	4.7	51.2	0.0		51.2	-51.2			
3	2003	0.0	0.00	0.0	0.0	0.0	40.7	34.1			5.5	3.7	8.4	92.4	0.0		92.4	-92.4			
4	2004	0.0	0.00	0.0	0.0	0.0	40.6	20.5			4.6	3.1	6.8	75.6	0.0		75.6	-75.6			
5	2005	19.8	0.03	2.0	-22.1	-0.3							0.0	2.09	0.0		2.1	-2.4			
6	2006	32.1	0.03	3.2	-22.1	13.2							0.0	2.09	0.0		2.1	11.1			
7	2007	41.4	0.03	4.1	-22.1	23.5							0.0	2.09	0.0		2.1	21.4			
8	2008	51.3	0.03	5.1	-22.1	34.4							0.0	2.09	0.0		2.1	32.3			
9	2009	58.3	0.03	5.8	-22.1	42.1							0.0	2.09	0.0		2.1	40.0			
10	2010	58.3	0.03	5.8	-22.1	42.1							0.0	2.09	0.0		2.1	40.0			
11	2011	58.3	0.03	5.8	-22.1	42.1							0.0	2.09	0.0		2.1	40.0			
12	2012	58.3	0.03	5.8	-22.1	42.1							0.0	2.09	0.0		2.1	40.0			
13	2013	58.3	0.03	5.8	-22.1	42.1							0.0	2.09	0.0		2.1	40.0			
14	2014	58.3	0.03	5.8	-22.1	42.1							0.0	2.09	0.0		2.1	40.0			
15	2015	58.3	0.03	5.8	-22.1	42.1							0.0	2.09	0.0		2.1	40.0			
16	2016	58.3	0.03	5.8	-22.1	42.1							0.0	2.09	0.0		2.1	40.0			
17	2017	58.3	0.03	5.8	-22.1	42.1							0.0	2.09	0.0		2.1	40.0			
18	2018	58.3	0.03	5.8	-22.1	42.1							0.0	2.09	0.0		2.1	40.0			
19	2019	58.3	0.03	5.8	-22.1	42.1							0.0	2.09	0.0		2.1	40.0			
20	2020	58.3	0.03	5.8	-22.1	42.1							0.0	2.09	0.0		2.1	40.0			
21	2021	58.3	0.03	5.8	-22.1	42.1							0.0	2.09	0.0		2.1	40.0			
22	2022	58.3	0.03	5.8	-22.1	42.1							0.0	2.09	0.0		2.1	40.0			
23	2023	58.3	0.03	5.8	-22.1	42.1							0.0	2.09	0.0		2.1	40.0			
24	2024	58.3	0.03	5.8	-22.1	42.1							0.0	2.09	0.0		2.1	40.0			
25	2025	58.3	0.03	5.8	-22.1	42.1							0.0	2.09	0.0		2.1	40.0			
26	2026	58.3	0.03	5.8	-22.1	42.1							0.0	2.09	0.0		2.1	40.0			
27	2027	58.3	0.03	5.8	-22.1	42.1							0.0	2.09	0.0		2.1	40.0			
28	2028	58.3	0.03	5.8	-22.1	42.1							0.0	2.09	0.0		2.1	40.0			
29	2029	58.3	0.03	5.8	-22.1	42.1							0.0	2.09	13.4	15.5	26.6	13.4			
30	2030	58.3	0.03	5.8	-22.1	42.1							0.0	2.09	0.0		2.1	40.0			
31	2031	58.3	0.03	5.8	-22.1	42.1							0.0	2.09	0.0		2.1	40.0			
32	2032	58.3	0.03	5.8	-22.1	42.1							0.0	2.09	0.0		2.1	40.0			
33	2033	58.3	0.03	5.8	-22.1	42.1							0.0	2.09	0.0		2.1	40.0			
34	2034	58.3	0.03	5.8	-22.1	42.1							0.0	2.09	0.0		2.1	40.0			
35	2035	58.3	0.03	5.8	-22.1	42.1							0.0	2.09	0.0		2.1	40.0			
36	2036	58.3	0.03	5.8	-22.1	42.1							0.0	2.09	0.0		2.1	40.0			
37	2037	58.3	0.03	5.8	-22.1	42.1							0.0	2.09	0.0		2.1	40.0			
38	2038	58.3	0.03	5.8	-22.1	42.1							0.0	2.09	0.0		2.1	40.0			
39	2039	58.3	0.03	5.8	-22.1	42.1							0.0	2.09	0.0		2.1	40.0			
40	2040	58.3	0.03	5.8	-22.1	42.1							0.0	2.09	0.0		2.1	40.0			
41	2041	58.3	0.03	5.8	-22.1	42.1							0.0	2.09	0.0		2.1	40.0			
42	2042	58.3	0.03	5.8	-22.1	42.1							0.0	2.09	0.0		2.1	40.0			
43	2043	58.3	0.03	5.8	-22.1	42.1							0.0	2.09	0.0		2.1	40.0			
44	2044	58.3	0.03	5.8	-22.1	42.1							0.0	2.09	0.0		2.1	40.0			
45	2045	58.3	0.03	5.8	-22.1	42.1							0.0	2.09	0.0		2.1	40.0			
46	2046	58.3	0.03	5.8	-22.1	42.1							0.0	2.09	0.0		2.1	40.0			
47	2047	58.3	0.03	5.8	-22.1	42.1							0.0	2.09	0.0		2.1	40.0			
48	2048	58.3	0.03	5.8	-22.1	42.1							0.0	2.09	0.0		2.1	40.0			
49	2049	58.3	0.03	5.8	-22.1	42.1							0.0	2.09	0.0		2.1	40.0			
50	2050	58.3	0.03	5.8	-22.1	42.1							0.0	2.09	0.0		2.1	40.0			
51	2051	58.3	0.03	5.8	-22.1	42.1							0.0	2.09	0.0		2.1	40.0			
52	2052	58.3	0.03	5.8	-22.1	42.1							0.0	2.09	0.0		2.1	40.0			
53	2053	58.3	0.03	5.8	-22.1	42.1							0.0	2.09	0.0		2.1	40.0			
54	2054	58.3	0.03	5.8	-22.1	42.1							0.0	2.09	0.0		2.1	40.0			
EIRR=		12.2%																			
B/C =		1.62 (at discount rate: 8%)																			
NPV=		120.9 (at discount rate: 8%)																			
NPV=		242.0 (at discount rate: 6%)																			
NPV=		48.5 (at discount rate: 10%)																			
NPV=		3.4 (at discount rate: 12%)																			

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Table XVIII.2.4.8: Analyse coût-bénéfice des projets prioritaires (8/10)

Azghar (including Indirect Benefit)		Unit: million DH																			
Year in order	Year	Benefit					Cost										O/M	Replace-ment	Total Cost	Net Cash Flow	
		Agri-culture	Flood & erosion control	Other direct benefit	Indirect Benefit	Neg. benefit to downstream reservoir	Total Benefit	Dam	Irrigation	Resettle-ment	Engr. services	Adminis-tration	Physical contingency	Sub-total	Engr. services	Adminis-tration					Physical contingency
1	2001	0.0	0.00	0.0	0.0	0.0	0.0	0.0	2.2	0.1	0.2	2.5	0.0				2.5	-2.5			
2	2002	0.0	0.00	0.0	16.0	0.0	16.0	25.7	13.6	2.2	2.9	2.1	4.7	51.2	0.0		51.2	-35.2			
3	2003	0.0	0.00	0.0	30.4	0.0	30.4	40.7	34.1		5.5	3.7	8.4	92.4	0.0		92.4	-62.0			
4	2004	0.0	0.00	0.0	24.9	0.0	24.9	40.6	20.5		4.6	3.1	6.8	75.6	0.0		75.6	-50.7			
5	2005	19.8	0.03	2.0	1.3	-22.1	1.0						0.0	2.09	0.0		2.1	-1.1			
6	2006	32.1	0.03	3.2	1.3	-22.1	14.5						0.0	2.09	0.0		2.1	12.4			
7	2007	41.4	0.03	4.1	1.3	-22.1	24.8						0.0	2.09	0.0		2.1	22.7			
8	2008	51.3	0.03	5.1	1.3	-22.1	35.7						0.0	2.09	0.0		2.1	33.6			
9	2009	58.3	0.03	5.8	1.3	-22.1	43.4						0.0	2.09	0.0		2.1	41.3			
10	2010	58.3	0.03	5.8	1.3	-22.1	43.4						0.0	2.09	0.0		2.1	41.3			
11	2011	58.3	0.03	5.8	1.3	-22.1	43.4						0.0	2.09	0.0		2.1	41.3			
12	2012	58.3	0.03	5.8	1.3	-22.1	43.4						0.0	2.09	0.0		2.1	41.3			
13	2013	58.3	0.03	5.8	1.3	-22.1	43.4						0.0	2.09	0.0		2.1	41.3			
14	2014	58.3	0.03	5.8	1.3	-22.1	43.4						0.0	2.09	0.0		2.1	41.3			
15	2015	58.3	0.03	5.8	1.3	-22.1	43.4						0.0	2.09	0.0		2.1	41.3			
16	2016	58.3	0.03	5.8	1.3	-22.1	43.4						0.0	2.09	0.0		2.1	41.3			
17	2017	58.3	0.03	5.8	1.3	-22.1	43.4						0.0	2.09	0.0		2.1	41.3			
18	2018	58.3	0.03	5.8	1.3	-22.1	43.4						0.0	2.09	0.0		2.1	41.3			
19	2019	58.3	0.03	5.8	1.3	-22.1	43.4						0.0	2.09	0.0		2.1	41.3			
20	2020	58.3	0.03	5.8	1.3	-22.1	43.4						0.0	2.09	0.0		2.1	41.3			
21	2021	58.3	0.03	5.8	1.3	-22.1	43.4						0.0	2.09	0.0		2.1	41.3			
22	2022	58.3	0.03	5.8	1.3	-22.1	43.4						0.0	2.09	0.0		2.1	41.3			
23	2023	58.3	0.03	5.8	1.3	-22.1	43.4						0.0	2.09	0.0		2.1	41.3			
24	2024	58.3	0.03	5.8	1.3	-22.1	43.4						0.0	2.09	0.0		2.1	41.3			
25	2025	58.3	0.03	5.8	1.3	-22.1	43.4						0.0	2.09	0.0		2.1	41.3			
26	2026	58.3	0.03	5.8	1.3	-22.1	43.4						0.0	2.09	0.0		2.1	41.3			
27	2027	58.3	0.03	5.8	1.3	-22.1	43.4						0.0	2.09	0.0		2.1	41.3			
28	2028	58.3	0.03	5.8	1.3	-22.1	43.4						0.0	2.09	0.0		2				

Table XVIII.2.4.8: Analyse coût-bénéfice des projets prioritaires (9/10)

Overall Plan											Unit: million DH					
Year in order	Year	Benefit				Total Benefit	Cost					O/M	Replacement	Total Cost	Net Cash Flow	
		N'Fifikh	Taskourt	Timkit	Azghar		N'Fifikh	Taskourt	Investment	Azghar	Sub-total					
1	2001															
2	2002															
3	2003							14.2		14.2				14.2		-14.2
4	2004						1.7	49.8	3.2	2.5	57.2			57.2		-57.2
5	2005						50.4	104.7	35.5	51.2	241.8			241.8		-241.8
6	2006						106.8	182.7	67.7	92.4	449.6			449.6		-449.6
7	2007						56.2	155.1	127.6	75.6	414.5			414.5		-414.5
8	2008	9.6	29.1		-0.3	38.5				92.2	7.9		100.1		-61.6	
9	2009	12.9	38.8	17.8	13.2	82.8					11.4		11.4		71.4	
10	2010	16.1	45.4	24.4	23.5	109.4					11.4		11.4		98.0	
11	2011	16.1	51.0	28.3	34.4	129.7					11.4		11.4		118.3	
12	2012	17.2	54.7	30.4	42.1	144.4					11.4		11.4		133.0	
13	2013	17.4	54.7	31.5	42.1	145.7					11.4		11.4		134.3	
14	2014	18.6	54.7	31.5	42.1	146.9					11.4		11.4		135.5	
15	2015	19.8	54.7	31.5	42.1	148.1					11.4		11.4		136.7	
16	2016	19.8	54.7	31.5	42.1	148.1					11.4		11.4		136.7	
17	2017	19.8	54.7	31.5	42.1	148.1					11.4		11.4		136.7	
18	2018	19.8	54.7	31.5	42.1	148.1					11.4		11.4		136.7	
19	2019	19.8	54.7	31.5	42.1	148.1					11.4		11.4		136.7	
20	2020	19.8	54.8	31.5	42.1	148.1					11.4		11.4		136.7	
21	2021	19.8	54.8	31.5	42.1	148.1					11.4		11.4		136.7	
22	2022	19.8	54.8	31.5	42.1	148.1					11.4		11.4		136.7	
23	2023	19.8	54.8	31.5	42.1	148.1					11.4		11.4		136.7	
24	2024	19.8	54.8	31.5	42.1	148.1					11.4		11.4		136.7	
25	2025	19.8	54.8	31.5	42.1	148.1					11.4		11.4		136.7	
26	2026	19.8	54.8	31.5	42.1	148.1					11.4		11.4		136.7	
27	2027	19.8	54.8	31.5	42.1	148.1					11.4		11.4		136.7	
28	2028	19.8	54.8	31.5	42.1	148.1					11.4		11.4		136.7	
29	2029	19.8	54.8	31.5	42.1	148.1					11.4		11.4		136.7	
30	2030	19.8	54.8	31.5	42.1	148.1					11.4		11.4		136.7	
31	2031	19.8	54.8	31.5	42.1	148.1					11.4		11.4		136.7	
32	2032	19.8	54.8	31.5	42.1	148.1					11.4		11.4		136.7	
33	2033	19.8	54.8	31.5	42.1	148.1					11.4		11.4		136.7	
34	2034	19.8	54.8	31.5	42.1	148.1					11.4		11.4		136.7	
35	2035	19.8	54.8	31.5	42.1	148.1					11.4		11.4		136.7	
36	2036	19.8	54.8	31.5	42.1	148.1					11.4		11.4		136.7	
37	2037	19.8	54.8	31.5	42.1	148.1					11.4		11.4		136.7	
38	2038	19.8	54.8	31.5	42.1	148.1					11.4		11.4		136.7	
39	2039	19.8	54.8	31.5	42.1	148.1					11.4		11.4		136.7	
40	2040	19.8	54.8	31.5	42.1	148.1					11.4		11.4		136.7	
41	2041	19.8	54.8	31.5	42.1	148.1					11.4		11.4		136.7	
42	2042	19.8	54.8	31.5	42.1	148.1					11.4		11.4		136.7	
43	2043	19.8	54.8	31.5	42.1	148.1					11.4		11.4		136.7	
44	2044	19.8	54.8	31.5	42.1	148.1					11.4		11.4		136.7	
45	2045	19.8	54.8	31.5	42.1	148.1					11.4		11.4		136.7	
46	2046	19.8	54.8	31.5	42.1	148.1					11.4		11.4		136.7	
47	2047	19.8	54.8	31.5	42.1	148.1					11.4		11.4		136.7	
48	2048	19.8	54.8	31.5	42.1	148.1					11.4		11.4		136.7	
49	2049	19.8	54.8	31.5	42.1	148.1					11.4		11.4		136.7	
50	2050	19.8	54.8	31.5	42.1	148.1					11.4		11.4		136.7	
51	2051	19.8	54.8	31.5	42.1	148.1					11.4		11.4		136.7	
52	2052	19.8	54.8	31.5	42.1	148.1					11.4		11.4		136.7	
53	2053	19.8	54.8	31.5	42.1	148.1					11.4		11.4		136.7	
54	2054	19.8	54.8	31.5	42.1	148.1					11.4		11.4		136.7	
55	2055	19.8	54.8	31.5	42.1	148.1					11.4		11.4		136.7	
56	2056	19.8	54.8	31.5	42.1	148.1					11.4		11.4		136.7	
57	2055	19.8	54.8	31.5	42.1	148.1					11.4		11.4		136.7	
58	2056	-	-	-	-	31.5					3.5		3.5		28.0	
EIRR=	8.5%															
B/C =	1.07 (at discount rate: 8%)															
NPV=	58.8 (at discount rate: 8%)															
NPV=	394.6 (at discount rate: 6%)															
NPV=	-117.7 (at discount rate: 10%)															
NPV=	-210.3 (at discount rate: 12%)															

Table XVIII.2.4.8: Analyse coût-bénéfice des projets prioritaires (10/10)

Overall Plan (including Indirect Benefit)											Unit: million DH					
Year in order	Year	Benefit				Total Benefit	Cost					O/M	Replacement	Total Cost	Net Cash Flow	
		N'Fifikh	Taskourt	Timkit	Azghar		N'Fifikh	Taskourt	Investment	Azghar	Sub-total					
1	2001															
2	2002															
3	2003							14.2		14.2				14.2		-14.2
4	2004						1.7	49.8	3.2	2.5	57.2			57.2		-57.2
5	2005	16.1	34.5	10.7	16.0	77.2	50.4	104.7	35.5	51.2	241.8			241.8		-164.6
6	2006	35.2	60.1	22.3	30.4	148.0	106.8	182.7	67.7	92.4	449.6			449.6		-301.6
7	2007	18.5	51.0	42.0	24.9	136.3	56.2	155.1	127.6	75.6	414.5			414.5		-278.2
8	2008	10.0	30.0	30.4	1.0	71.5					92.2	7.9	100.1		-28.6	
9	2009	13.3	39.7	18.5	14.5	86.1						11.4	11.4		74.7	
10	2010	16.5	46.3	25.1	24.8	112.7						11.4	11.4		101.3	
11	2011	16.5	51.9	29.0	35.7	133.0						11.4	11.4		121.6	
12	2012	17.6	55.6	31.1	43.4	147.7						11.4	11.4		136.3	
13	2013	17.8	55.6	32.2	43.4	149.0						11.4	11.4		137.6	
14	2014	19.0	55.6	32.2	43.4	150.2						11.4	11.4		138.8	
15	2015	20.2	55.6	32.2	43.4	151.4						11.4	11.4		140.0	
16	2016	20.2	55.6	32.2	43.4	151.4						11.4	11.4		140.0	
17	2017	20.2	55.6	32.2	43.4	151.4						11.4	11.4		140.0	
18	2018	20.2	55.6	32.2	43.4	151.4						11.4	11.4		140.0	
19	2019	20.2	55.6	32.2	43.4	151.4						11.4	11.4		140.0	
20	2020	20.2	55.7	32.2	43.4	151.4						11.4	11.4		140.0	
21	2021	20.2	55.7	32.2	43.4	151.4						11.4	11.4		140.0	
22	2022	20.2	55.7	32.2	43.4	151.4						11.4	11.4		140.0	
23	2023	20.2	55.7	32.2	43.4	151.4						11.4	11.4		140.0	
24	2024	20.2	55.7	32.2	43.4	151.4						11.4	11.4		140.0	
25	2025	20.2	55.7	32.2	43.4	151.4						11.4	11.4		140.0	
26	2026	20.2	55.7	32.2	43.4	151.4						11.4	11.4		140.0	
27	2027	20.2	55.7	32.2	43.4	151.4						11.4	11.4		140.0	
28	2028	20.2	55.7	32.2	43.4	151.4						11.4	11.4		140.0	
29	2029	20.2	55.7	32.2	43.4	151.4						11.4	11.4		140.0	
30	2030	20.2	55.7	32.2	43.4	151.4						11.4	11.4		140.0	
31	2031	20.2	55.7	32.2	43.4	151.4						11.4	11.4		140.0	
32	2032	20.2	55.7	32.2	43.4	151.4						11.4	11.4		140.0	
33	2033	20.2	55.7	32.2	43.4	151.4						11.4	11.4		140.0	
34	2034	20.2	55.7	32.2	43.4	151.4						11.4	11.4		140.0	
35	2035	20.2	55.7	32.2	43.4	151.4						11.4	11.4		140.0	
36	2036	20.2	55.7	32.2	43.4	151.4						11.4	11.4		140.0	
37	2037	20.2	55.7	32.2	43.4	151.4						11.4	11.4		140.0	
38	2038	20.2	55.7	32.2	43.4	151.4						11.4	11.4		140.0	
39	2039	20.2	55.7	32.2	43.4	151.4						11.4	11.4		140.0	
40	2040	20.2	55.7	32.2	43.4	151.4						11.4	11.4			

Table XVIII.3.1.1: Programme Annuel de déboursement (1/3)
(Financial Price, million DH)

N°Fifikh

Cost Item	Total			2001			2002			2003			2004			2005			2006			2007			2008			
	F.C.	L.C.	Total	F.C.	L.C.	Sub-total	F.C.	L.C.	Sub-total	F.C.	L.C.	Sub-total	F.C.	L.C.	Sub-total	F.C.	L.C.	Sub-total	F.C.	L.C.	Sub-total	F.C.	L.C.	Sub-total	F.C.	L.C.	Sub-total	
1. Construction cost																												
Dam and appurtenant facilities	93.0	50.1	143.1	-	-	-	-	-	-	-	-	-	-	-	-	22.3	12.0	34.3	47.4	25.6	73.0	23.3	12.5	35.8	-	-	-	
Irrigation facilities	18.3	18.2	36.5	-	-	-	-	-	-	-	-	-	-	-	-	3.7	3.6	7.3	9.2	9.1	18.3	5.4	5.5	10.9	-	-	-	
Water supply facilities	-	1.4	1.4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1.4	1.4	-	-	-	
Sub-total of 1	111.3	69.7	181.0	-	-	-	-	-	-	-	-	-	-	-	-	26.0	15.6	41.6	56.6	34.7	91.3	28.7	19.4	48.1	-	-	-	
2. Resettlement cost	-	3.3	3.3	-	-	-	-	-	-	-	-	-	-	1.7	1.7	-	1.6	1.6	-	-	-	-	-	-	-	-	-	
3. Engineering services cost	8.2	4.5	12.7	-	-	-	-	-	-	-	-	-	-	-	-	1.9	1.0	2.9	4.1	2.3	6.4	2.2	1.2	3.4	-	-	-	
4. Administration cost	-	9.2	9.2	-	-	-	-	-	-	-	-	-	-	0.1	0.1	-	2.2	2.2	-	4.6	4.6	-	2.3	2.3	-	-	-	
5. Physical contingency	12.0	8.7	20.7	-	-	-	-	-	-	-	-	-	-	0.2	0.2	2.8	2.0	4.8	6.1	4.2	10.3	3.1	2.3	5.4	-	-	-	
Sub-total of (1.- 5.)	131.5	95.4	226.9	-	-	-	-	-	-	-	-	-	-	-	-	2.0	2.0	30.7	22.4	53.1	66.8	45.8	112.6	34.0	25.2	59.2	-	-
6. Price contingency	25.7	18.6	44.3	-	-	-	-	-	-	-	-	-	-	0.3	0.3	4.9	3.6	8.5	13.0	8.9	21.9	7.8	5.8	13.6	-	-	-	
Sub-total of (1.- 6.)	157.2	114.0	271.2	-	-	-	-	-	-	-	-	-	-	-	-	2.3	2.3	35.6	26.0	61.6	79.8	54.7	134.5	41.8	31.0	72.8	-	-
7. Value Added Tax	-	38.9	38.9	-	-	-	-	-	-	-	-	-	-	0.3	0.3	-	8.8	8.8	-	19.3	19.3	-	10.5	10.5	-	-	-	
Total of (1.- 7.)	157.2	152.9	310.1	-	-	-	-	-	-	-	-	-	-	-	-	2.6	2.6	35.6	34.8	70.4	79.8	74.0	153.8	41.8	41.5	83.3	-	-

Note: 1) F.C. means foreign currency portion and L.C. means local currency portion.

2) Physical contingency of 10 % and price contingency of 3% per annum are assumed for both foreign and local currency portions.

Taskourt

Cost Item	Total			2001			2002			2003			2004			2005			2006			2007			2008			
	F.C.	L.C.	Total	F.C.	L.C.	Sub-total	F.C.	L.C.	Sub-total	F.C.	L.C.	Sub-total	F.C.	L.C.	Sub-total	F.C.	L.C.	Sub-total	F.C.	L.C.	Sub-total	F.C.	L.C.	Sub-total	F.C.	L.C.	Sub-total	
1. Construction cost																												
Dam and appurtenant facilities	179.0	96.4	275.4	-	-	-	-	-	-	-	-	-	19.7	10.6	30.3	41.2	22.2	63.4	59.1	31.8	90.9	59.0	31.8	90.8	-	-	-	
Irrigation facilities	65.9	65.8	131.7	-	-	-	-	-	-	-	-	-	-	-	-	13.2	13.2	26.4	33.0	32.9	65.9	19.7	19.7	39.4	-	-	-	
Water supply facilities	-	2.4	2.4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	2.4	2.4	-	-	-	
Sub-total of 1.2	244.9	164.6	409.5	-	-	-	-	-	-	-	-	-	19.7	10.6	30.3	54.4	35.4	89.8	92.1	64.7	156.8	78.7	53.9	132.6	-	-	-	
2. Resettlement cost	-	28.5	28.5	-	-	-	-	-	-	-	-	14.3	14.3	-	14.2	14.2	-	-	-	-	-	-	-	-	-	-	-	
3. Engineering services cost	18.6	10.1	28.7	-	-	-	-	-	-	-	-	-	1.4	0.7	2.1	4.1	2.2	6.3	7.1	3.9	11.0	6.0	3.3	9.3	-	-	-	
4. Administration cost	-	21.9	21.9	-	-	-	-	-	-	-	-	0.7	0.7	-	2.2	2.2	-	4.5	4.5	-	7.8	7.8	-	6.7	6.7	-	-	
5. Physical contingency	26.4	22.5	48.9	-	-	-	-	-	-	-	-	1.5	1.5	2.1	2.8	4.9	5.9	4.2	10.1	9.9	7.6	17.5	8.5	6.4	14.9	-	-	
Sub-total of (1.- 5.)	289.9	247.6	537.5	-	-	-	-	-	-	-	-	-	16.5	16.5	23.2	30.5	53.7	64.4	46.3	110.7	109.1	84.0	193.1	93.2	70.3	163.5	-	-
6. Price contingency	55.8	45.2	101.0	-	-	-	-	-	-	-	-	1.5	1.5	2.9	3.8	6.7	10.3	7.4	17.7	21.2	16.3	37.5	21.4	16.2	37.6	-	-	
Sub-total of (1.- 6.)	345.7	292.8	638.5	-	-	-	-	-	-	-	-	18.0	18.0	26.1	34.3	60.4	74.7	53.7	128.4	130.3	100.3	230.6	114.6	86.5	201.1	-	-	
7. Value Added Tax	-	91.6	91.6	-	-	-	-	-	-	-	-	2.5	2.5	-	8.6	8.6	-	18.4	18.4	-	33.2	33.2	-	28.9	28.9	-	-	
Total of (1.- 7.)	345.7	384.4	730.1	-	-	-	-	-	-	-	-	20.5	20.5	26.1	42.9	69.0	74.7	72.1	146.8	130.3	133.5	263.8	114.6	115.4	230.0	-	-	

Note: 1) F.C. means foreign currency portion and L.C. means local currency portion.

2) Physical contingency of 10 % and price contingency of 3% per annum are assumed for both foreign and local currency portions.

Table XVIII.1.1: Programme Annuel de déboursement (2/3)
(Financial Price, million DH)

Timkit

Cost Item	Total			2001			2002			2003			2004			2005			2006			2007			2008			
	F.C.	L.C.	Total	F.C.	L.C.	Sub-total	F.C.	L.C.	Sub-total	F.C.	L.C.	Sub-total	F.C.	L.C.	Sub-total	F.C.	L.C.	Sub-total	F.C.	L.C.	Sub-total	F.C.	L.C.	Sub-total	F.C.	L.C.	Sub-total	
1. Construction cost																												
Dam and appurtenant facilities	105.5	56.8	162.3	-	-	-	-	-	-	-	-	-	-	-	-	17.9	9.7	27.6	23.2	12.5	35.7	34.8	18.7	53.5	29.6	15.9	45.5	
Irrigation facilities	56.2	56.1	112.3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	11.2	11.2	22.4	28.1	28.1	56.2	16.9	16.8	33.7	
Sub-total of 1.3	161.7	112.9	274.6	-	-	-	-	-	-	-	-	-	-	-	-	17.9	9.7	27.6	34.4	23.7	58.1	62.9	46.8	109.7	46.5	32.7	79.2	
2. Resettlement cost	-	6.4	6.4	-	-	-	-	-	-	-	-	-	-	3.2	3.2	-	3.2	3.2	-	-	-	-	-	-	-	-	-	
3. Engineering services cost	12.5	6.7	19.2	-	-	-	-	-	-	-	-	-	-	-	-	1.3	0.7	2.0	2.6	1.4	4.0	5.0	2.7	7.7	3.6	1.9	5.5	
4. Administration cost	-	14.0	14.0	-	-	-	-	-	-	-	-	-	-	0.2	0.2	-	1.5	1.5	-	2.9	2.9	-	5.5	5.5	-	3.9	3.9	
5. Physical contingency	17.4	14.0	31.4	-	-	-	-	-	-	-	-	-	-	0.3	0.3	1.9	1.5	3.4	3.7	2.8	6.5	6.8	5.5	12.3	5.0	3.9	8.9	
Sub-total of (1.- 5.)	191.6	154.0	345.6	-	-	-	-	-	-	-	-	-	-	3.7	3.7	21.1	16.6	37.7	40.7	30.8	71.5	74.7	60.5	135.2	55.1	42.4	97.5	
6. Price contingency	43.2	34.3	77.5	-	-	-	-	-	-	-	-	-	-	0.5	0.5	3.4	2.6	6.0	7.9	6.0	13.9	17.2	13.9	31.1	14.7	11.3	26.0	
Sub-total of (1.- 6.)	234.8	188.3	423.1	-	-	-	-	-	-	-	-	-	-	4.2	4.2	24.5	19.2	43.7	48.6	36.8	85.4	91.9	74.4	166.3	69.8	53.7	123.5	
7. Value Added Tax	-	60.8	60.8	-	-	-	-	-	-	-	-	-	-	0.6	0.6	-	6.3	6.3	-	12.3	12.3	-	23.9	23.9	-	17.7	17.7	
Total of (1.- 7.)	234.8	249.1	483.9	-	-	-	-	-	-	-	-	-	-	4.8	4.8	24.5	25.5	50.0	48.6	49.1	97.7	91.9	98.3	190.2	69.8	71.4	141.2	

Note: 1) F.C. means foreign currency portion and L.C. means local currency portion.

2) Physical contingency of 10 % and price contingency of 3% per annum are assumed for both foreign and local currency portions.

Azghar

Cost Item	Total			2001			2002			2003			2004			2005			2006			2007			2008			
	F.C.	L.C.	Total	F.C.	L.C.	Sub-total	F.C.	L.C.	Sub-total	F.C.	L.C.	Sub-total	F.C.	L.C.	Sub-total	F.C.	L.C.	Sub-total	F.C.	L.C.	Sub-total	F.C.	L.C.	Sub-total	F.C.	L.C.	Sub-total	
1. Construction cost																												
Dam and appurtenant facilities	73.1	39.4	112.5	-	-	-	-	-	-	-	-	-	-	-	-	17.5	9.5	27.0	27.8	15.0	42.8	27.8	14.9	42.7	-	-	-	
Irrigation facilities	36.7	36.6	73.3	-	-	-	-	-	-	-	-	-	-	-	-	7.3	7.3	14.6	18.4	18.3	36.7	11.0	11.0	22.0	-	-	-	
Sub-total of 1.4	109.8	76.0	185.8	-	-	-	-	-	-	-	-	-	-	-	-	24.8	16.8	41.6	46.2	33.3	79.5	38.8	25.9	64.7	-	-	-	
2. Resettlement cost	-	5.1	5.1	-	-	-	-	-	-	-	-	-	-	2.6	2.6	-	2.5	2.5	-	-	-	-	-	-	-	-	-	
3. Engineering services cost	8.5	4.5	13.0	-	-	-	-	-	-	-	-	-	-	-	-	1.9	1.0	2.9	3.6	1.9	5.5	3.0	1.6	4.6	-	-	-	
4. Administration cost	-	9.5	9.5	-	-	-	-	-	-	-	-	-	-	0.1	0.1	-	2.2	2.2	-	4.0	4.0	-	3.2	3.2	-	-	-	
5. Physical contingency	11.8	9.5	21.3	-	-	-	-	-	-	-	-	-	-	0.3	0.3	2.7	2.3	5.0	5.0	3.9	8.9	4.1	3.0	7.1	-	-	-	
Sub-total of (1.- 5.)	130.1	104.6	234.7	-	-	-	-	-	-	-	-	-	-	3.0	3.0	29.4	24.8	54.2	54.8	43.1	97.9	45.9	33.7	79.6	-	-	-	
6. Price contingency	25.9	20.4	46.3	-	-	-	-	-	-	-	-	-	-	0.4	0.4	4.7	3.9	8.6	10.6	8.4	19.0	10.6	7.7	18.3	-	-	-	
Sub-total of (1.- 6.)	156.0	125.0	281.0	-	-	-	-	-	-	-	-	-	-	3.4	3.4	34.1	28.7	62.8	65.4	51.5	116.9	56.5	41.4	97.9	-	-	-	
7. Value Added Tax	-	40.4	40.4	-	-	-	-	-	-	-	-	-	-	0.5	0.5	-	9.0	9.0	-	16.8	16.8	-	14.1	14.1	-	-	-	
Total of (1.- 7.)	156.0	165.4	321.4	-	-	-	-	-	-	-	-	-	-	3.9	3.9	34.1	37.7	71.8	65.4	68.3	133.7	56.5	55.5	112.0	-	-	-	

Note: 1) F.C. means foreign currency portion and L.C. means local currency portion.

2) Physical contingency of 10 % and price contingency of 3% per annum are assumed for both foreign and local currency portions.

Table XVIII.1.1: Programme Annuel de déboursement (3/3)
(Financial Price, million DH)

Overall Plan

Cost Item	Total			2001			2002			2003			2004			2005			2006			2007			2008			
	F.C.	L.C.	Total	F.C.	L.C.	Sub-total	F.C.	L.C.	Sub-total	F.C.	L.C.	Sub-total	F.C.	L.C.	Sub-total	F.C.	L.C.	Sub-total	F.C.	L.C.	Sub-total	F.C.	L.C.	Sub-total	F.C.	L.C.	Sub-total	
1. Construction cost																												
Dam and appurtenant facilities	450.6	242.7	693.3	-	-	-	-	-	-	-	-	-	19.7	10.6	30.3	98.9	53.4	152.3	157.5	84.9	242.4	144.9	77.9	222.8	29.6	15.9	45.5	
Irrigation facilities	177.1	176.7	353.8	-	-	-	-	-	-	-	-	-	-	-	-	24.2	24.1	48.3	71.8	71.5	143.3	64.2	64.3	128.5	16.9	16.8	33.7	
Water supply facilities	-	3.8	3.8	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	3.8	3.8	-	-	-	
Sub-total of 1	627.7	423.2	1,050.9	-	-	-	-	-	-	-	-	-	19.7	10.6	30.3	123.1	77.5	200.6	229.3	156.4	385.7	209.1	146.0	355.1	46.5	32.7	79.2	
2. Resettlement cost	-	43.3	43.3	-	-	-	-	-	-	-	-	14.3	14.3	-	21.7	21.7	-	7.3	7.3	-	-	-	-	-	-	-	-	
3. Engineering services cost	47.8	25.8	73.6	-	-	-	-	-	-	-	-	-	1.4	0.7	2.1	9.2	4.9	14.1	17.4	9.5	26.9	16.2	8.8	25.0	3.6	1.9	5.5	
4. Administration cost	-	54.6	54.6	-	-	-	-	-	-	-	-	0.7	0.7	-	2.6	2.6	-	10.4	10.4	-	19.3	19.3	-	17.7	17.7	-	3.9	3.9
5. Physical contingency	67.6	54.7	122.3	-	-	-	-	-	-	-	-	1.5	1.5	2.1	3.6	5.7	13.3	10.0	23.3	24.7	18.5	43.2	22.5	17.2	39.7	5.0	3.9	8.9
Sub-total of (1.- 5.)	743.1	601.6	1,344.7	-	-	-	-	-	-	-	-	16.5	16.5	23.2	39.2	62.4	145.6	110.1	255.7	271.4	203.7	475.1	247.8	189.7	437.5	55.1	42.4	97.5
6. Price contingency	150.6	118.5	269.1	-	-	-	-	-	-	-	-	1.5	1.5	2.9	5.0	7.9	23.3	17.5	40.8	52.7	39.6	92.3	57.0	43.6	100.6	14.7	11.3	26.0
Sub-total of (1.- 6.)	893.7	720.1	1,613.8	-	-	-	-	-	-	-	-	18.0	18.0	26.1	44.2	70.3	168.9	127.6	296.5	324.1	243.3	567.4	304.8	233.3	538.1	69.8	53.7	123.5
7. Value Added Tax	-	231.7	231.7	-	-	-	-	-	-	-	-	2.5	2.5	-	10.0	10.0	-	42.5	42.5	-	81.6	81.6	-	77.4	77.4	-	17.7	17.7
Total of (1.- 7.)	893.7	951.8	1,845.5	-	-	-	-	-	-	-	-	20.5	20.5	26.1	54.2	80.3	168.9	170.1	339.0	324.1	324.9	649.0	304.8	310.7	615.5	69.8	71.4	141.2

Note: 1) F.C. means foreign currency portion and L.C. means local currency portion.

2) Physical contingency of 10 % and price contingency of 3% per annum are assumed for both foreign and local currency portions.

Table XVIII.3.2.1: Rapport financier de la marge brute d'autofinancement pour la mise en place des projets (1/5)

N'Fifikh

Unit: Million DH

Year in order	Year	Capital Cost			Foreign Loan Accumulated 75% of (a)	A part of capital cost allocated by the Government	Cash Outflow						Cash Inflow				Balance (c) - (b)		
		F.C.	L.C.	Total (a)			O & M cost			Replace-ment cost	Repayment of Loan		Total (b)	Irrigation water	Water supply	Government subsidy		Total (c)	
							Dam	Irrigation	Water sup.		Interest	Capital							
1	2001																		
2	2002																		
3	2003																		
4	2004		2.6	2.6	-	2.6													
5	2005	35.6	34.8	70.4	54.7	15.7													
6	2006	79.8	74.0	153.8	170.1	38.4					1.2	1.2				1.2	1.2		
7	2007	41.8	41.5	83.3	232.5	20.9					3.7	3.7				3.7	3.7		
8	2008				232.5		1.0	0.5	0.1		5.1	6.7	0.9	0.1		5.7	6.7		
9	2009				232.5		1.0	0.7	0.1		5.1	6.9	1.3	0.1		5.5	6.9		
10	2010				232.5		1.1	0.9	0.1		5.1	7.2	1.6	0.1		5.5	7.2		
11	2011				232.5		1.1	0.9	0.1		5.1	7.2	1.6	0.1		5.5	7.2		
12	2012				232.5		1.1	1.0	0.1		5.1	7.3	1.7	0.1		5.5	7.3		
13	2013				232.5		1.2	1.0	0.1		5.1	7.4	1.7	0.2		5.6	7.4		
14	2014				232.5		1.2	1.1	0.1		5.1	7.5	1.8	0.2		5.6	7.5		
15	2015				220.8		1.2	1.3	0.1		5.1	11.7	2.0	0.2		17.3	19.4		
16	2016				209.1		1.3	1.3	0.1		4.9	11.7	2.0	0.2		17.1	19.3		
17	2017				197.4		1.3	1.3	0.1		4.6	11.7	2.0	0.2		16.8	19.0		
18	2018				185.7		1.3	1.4	0.2		4.3	11.7	2.0	0.2		16.8	18.9		
19	2019				174.0		1.4	1.4	0.2		4.1	11.7	2.0	0.2		16.6	18.8		
20	2020				162.3		1.4	1.5	0.2		3.8	11.7	2.0	0.2		16.5	18.6		
21	2021				150.6		1.5	1.5	0.2		3.6	11.7	2.0	0.2		16.3	18.5		
22	2022				138.9		1.5	1.5	0.2		3.3	11.7	2.0	0.2		16.1	18.2		
23	2023				127.2		1.6	1.6	0.2		3.1	11.7	2.0	0.2		16.0	18.2		
24	2024				115.5		1.6	1.6	0.2		2.8	11.7	2.0	0.2		15.7	17.9		
25	2025				103.8		1.6	1.7	0.2		2.5	11.7	2.0	0.2		15.6	17.7		
26	2026				92.1		1.7	1.7	0.2		2.3	11.7	2.0	0.2		15.4	17.6		
27	2027				80.4		1.7	1.8	0.2		2.0	11.7	2.0	0.2		15.3	17.4		
28	2028				68.7		1.8	1.8	0.2		1.8	11.7	2.0	0.2		15.1	17.3		
29	2029				57.0		1.9	1.9	0.2		1.5	11.7	2.0	0.2		15.1	17.2		
30	2030				45.3		1.9	1.9	0.2		1.3	11.7	2.0	0.2		14.8	17.0		
31	2031				33.6		2.0	2.0	0.2		1.0	11.7	2.0	0.2		14.7	16.9		
32	2032				21.9		2.0	2.1	0.2		0.7	11.7	2.0	0.2		14.6	16.7		
33	2033				10.2		2.1	2.1	0.2	31.5	0.5	11.7	2.0	0.2		45.9	48.1		
34	2034				-		2.2	2.2	0.2		0.2	10.2	2.0	0.2		12.9	15.0		
35	2035				-		2.2	2.3	0.3			4.8	2.0	0.2		2.6	4.8		
36	2036				-		2.3	2.3	0.3			4.9	2.0	0.2		2.7	4.9		
37	2037				-		2.4	2.4	0.3			5.1	2.0	0.2		2.9	5.1		

Note: 1) F.C. means foreign currency components and L.C. means local currency components.

2) 75 % of the capital costs are assumed to be financed by bilateral or international organization as far as the costs are not non-eligible items.

3) The non-eligible items are costs for land acquisition, house compensation, administration, and any type of taxes and duties.

4) The assumed condition of finance is with an interest rate of 2.2% per annum for repayment period of 30 years including a grace period of 10 years.

Table XVIII3.2.1: Rapport financier de la marge brute d'autofinancement pour la mise en place des projets (2/5)

Taskourt

Unit: Million DH

Year in order	Year	Capital Cost			Foreign Loan Accumulated 75% of (a)	A part of capital cost allocated by the Government	Cash Outflow					Cash Inflow				Balance (c) - (b)				
		F.C.	L.C.	Total (a)			O & M cost			Replacement cost	Repayment of Loan		Total (b)	Irrigation water	Water supply		Government subsidy	Total (c)		
							Dam	Irrigation	Water sup.		Interest	Capital								
1	2001																			
2	2002																			
3	2003		20.5	20.5	-	20.5														
4	2004	26.1	42.9	69.0	40.1	28.9														
5	2005	74.7	72.1	146.8	162.6	24.3				0.9		0.9					0.9		0.9	
6	2006	130.3	133.5	263.8	375.0	51.4				3.6		3.6					3.6		3.6	
7	2007	114.6	115.4	230.0	547.5	57.5				8.3		8.3					8.3		8.3	
8	2008				547.5	-	1.9	1.9	0.2	12.0		16.0	3.8	0.3			12.0		16.0	
9	2009				547.5		2.0	2.7	0.2	12.0		16.9	5.0	0.3			11.7		16.9	
10	2010				547.5		2.0	3.2	0.2	12.0		17.4	5.9	0.3			11.3		17.4	
11	2011				547.5		2.1	3.7	0.2	12.0		18.0	6.6	0.3			11.2		18.0	
12	2012				547.5		2.2	4.1	0.2	12.0		18.5	7.1	0.3			11.2		18.5	
13	2013				547.5		2.2	4.3	0.2	12.0		18.7	7.1	0.3			11.4		18.7	
14	2014				520.1		2.3	4.4	0.2	12.0	27.4	46.3	7.1	0.3			39.0		46.3	
15	2015				492.7		2.4	4.5	0.2	11.4	27.4	45.9	7.1	0.3			38.6		45.9	
16	2016				465.3		2.4	4.6	0.2	10.8	27.4	45.4	7.1	0.3			38.1		45.4	
17	2017				437.9		2.5	4.8	0.2	10.2	27.4	45.1	7.1	0.3			37.8		45.1	
18	2018				410.5		2.6	4.9	0.3	9.6	27.4	44.8	7.1	0.3			37.5		44.8	
19	2019				383.1		2.7	5.1	0.3	9.0	27.4	44.5	7.1	0.3			37.2		44.5	
20	2020				355.7		2.7	5.2	0.3	8.4	27.4	44.0	7.1	0.3			36.7		44.0	
21	2021				328.3		2.8	5.4	0.3	7.8	27.4	43.7	7.1	0.3			36.3		43.7	
22	2022				300.9		2.9	5.6	0.3	7.2	27.4	43.4	7.1	0.3			36.0		43.4	
23	2023				273.5		3.0	5.7	0.3	6.6	27.4	43.0	7.1	0.3			35.6		43.0	
24	2024				246.1		3.1	5.9	0.3	6.0	27.4	42.7	7.1	0.3			35.3		42.7	
25	2025				218.7		3.2	6.1	0.3	5.4	27.4	42.4	7.1	0.3			35.0		42.4	
26	2026				191.3		3.3	6.2	0.3	4.8	27.4	42.0	7.1	0.3			34.6		42.0	
27	2027				163.9		3.4	6.4	0.3	4.2	27.4	41.7	7.1	0.3			34.3		41.7	
28	2028				136.5		3.5	6.6	0.3	3.6	27.4	41.4	7.1	0.3			34.0		41.4	
29	2029				109.1		3.6	6.8	0.4	3.0	27.4	41.2	7.1	0.3			33.8		41.2	
30	2030				81.7		3.7	7.0	0.4	2.4	27.4	40.9	7.1	0.3			33.5		40.9	
31	2031				54.3		3.8	7.2	0.4	1.8	27.4	40.6	7.1	0.3			33.2		40.6	
32	2032				26.9		3.9	7.5	0.4	1.2	27.4	40.4	7.1	0.3			33.0		40.4	
33	2033				-		4.0	7.7	0.4	78.6	0.6	26.9	118.2	7.1	0.3		110.8		118.2	
34	2034				-		4.1	7.9	0.4			12.4	7.1	0.3			5.0		12.4	
35	2035				-		4.3	8.2	0.4			12.9	7.1	0.3			5.5		12.9	
36	2036				-		4.4	8.4	0.4			13.2	7.1	0.3			5.8		13.2	
37	2037				-		4.5	8.6	0.4			13.5	7.1	0.3			6.1		13.5	

Note: 1) F.C. means foreign currency components and L.C. means local currency components.

2) 75 % of the capital costs are assumed to be financed by bilateral or international organization as far as the costs are not non-eligible items.

3) The non-eligible items are costs for land acquisition, house compensation, administration, and any type of taxes and duties.

4) The assumed condition of finance is with an interest rate of 2.2% per annum for repayment period of 30 years including a grace period of 10 years.

5) The price escalation of 3% per annum is assumed for the capital cost, O & M cost, and replacement cost of facilities.

6) Annual irrigation water charges are set to cover O & M and replacement cost of irrigation facilities for 25 years.

Table XVIII.3.2.1: Rapport financier de la marge brute d'autofinancement pour la mise en place des projets (3/5)

Timkit

Unit: Million DH

Year in order	Year	Capital Cost			Foreign Loan Accumulated 75% of (a)	A part of capital cost allocated by the Government	Cash Outflow						Cash Inflow				Balance (c) - (b)		
		F.C.	L.C.	Total (a)			O & M cost			Replace-ment cost	Repayment of Loan		Total (b)	Irrigation water	Water supply	Government subsidy		Total (c)	
							Dam	Irrigation	Water sup.		Interest	Capital							
1	2001																		
2	2002																		
3	2003																		
4	2004		4.8	4.8	-	4.8													
5	2005	24.5	25.5	50.0	37.7	12.3													
6	2006	48.6	49.1	97.7	114.3	21.1					0.8	0.8					0.8	0.8	
7	2007	91.9	98.3	190.2	257.0	47.5					2.5	2.5					2.5	2.5	
8	2008	69.8	71.4	141.2	362.9	35.3					5.7	5.7					5.7	5.7	
9	2009				362.9		1.2	1.8			8.0		11.0	3.5			7.5	11.0	
10	2010				362.9		1.2	2.6			8.0		11.8	4.8			7.0	11.8	
11	2011				362.9		1.2	3.1			8.0		12.3	5.6			6.7	12.3	
12	2012				362.9		1.3	3.4			8.0		12.7	6.0			6.7	12.7	
13	2013				362.9		1.3	3.6			8.0		12.9	6.2			6.7	12.9	
14	2014				362.9		1.4	3.7			8.0		13.1	6.2			6.9	13.1	
15	2015				344.7		1.4	3.8			8.0	18.2	31.4	6.2			25.2	31.4	
16	2016				326.5		1.4	4.0			7.6	18.2	31.2	6.2			25.0	31.2	
17	2017				308.3		1.5	4.1			7.2	18.2	31.0	6.2			24.8	31.0	
18	2018				290.1		1.5	4.2			6.8	18.2	30.7	6.2			24.5	30.7	
19	2019				271.9		1.6	4.3			6.4	18.2	30.5	6.2			24.3	30.5	
20	2020				253.7		1.6	4.5			6.0	18.2	30.3	6.2			24.1	30.3	
21	2021				235.5		1.7	4.6			5.6	18.2	30.1	6.2			23.9	30.1	
22	2022				217.3		1.7	4.7			5.2	18.2	29.8	6.2			23.6	29.8	
23	2023				199.1		1.8	4.9			4.8	18.2	29.7	6.2			23.5	29.7	
24	2024				180.9		1.8	5.0			4.4	18.2	29.4	6.2			23.2	29.4	
25	2025				162.7		1.9	5.2			4.0	18.2	29.3	6.2			23.1	29.3	
26	2026				144.5		1.9	5.3			3.6	18.2	29.0	6.2			22.8	29.0	
27	2027				126.3		2.0	5.5			3.2	18.2	28.9	6.2			22.7	28.9	
28	2028				108.1		2.0	5.7			2.8	18.2	28.7	6.2			22.5	28.7	
29	2029				89.9		2.1	5.8			2.4	18.2	28.5	6.2			22.3	28.5	
30	2030				71.7		2.2	6.0			2.0	18.2	28.4	6.2			22.2	28.4	
31	2031				53.5		2.2	6.2			1.6	18.2	28.2	6.2			22.0	28.2	
32	2032				35.3		2.3	6.4			1.2	18.2	28.1	6.2			21.9	28.1	
33	2033				17.1		2.4	6.6			0.8	18.2	28.0	6.2			21.8	28.0	
34	2034				-		2.4	6.8		58.1	0.4	17.1	84.8	6.2			78.6	84.8	
35	2035				-		2.5	7.0					9.5	6.2			3.3	9.5	
36	2036				-		2.6	7.2					9.8	6.2			3.6	9.8	
37	2037				-		2.7	7.4					10.1	6.2			3.9	10.1	

Note: 1) F.C. means foreign currency components and L.C. means local currency components.

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- 3) The non-eligible items are costs for land acquisition, house compensation, administration, and any type of taxes and duties.
- 4) The assumed condition of finance is with an interest rate of 2.2% per annum for repayment period of 30 years including a grace period of 10 years.
- 5) The price escalation of 3% per annum is assumed for the capital cost, O & M cost, and replacement cost of facilities .
- 6) Annual irrigation water charges are set to cover O & M and replacement cost of irrigation facilities for 25 years.

Table XVIII.3.2.1: Rapport financier de la marge brute d'autofinancement pour la mise en place des projets (4/5)

Azghar

Unit: Million DH

Year in order	Year	Capital Cost			Foreign Loan Accumulated 75% of (a)	A part of capital cost allocated by the Government	Cash Outflow					Cash Inflow				Balance (c) - (b)			
		F.C.	L.C.	Total (a)			O & M cost			Replacement cost	Repayment of Loan		Total (b)	Irrigation water	Water supply		Government subsidy	Total (c)	
							Dam	Irrigation	Water sup.		Interest	Capital							
1	2001																		
2	2002																		
3	2003																		
4	2004		3.9	3.9	-	3.9													
5	2005	34.1	37.7	71.8	56.7	15.1													
6	2006	65.4	68.3	133.7	157.0	33.4													
7	2007	56.5	55.5	112.0	241.0	28.0													
8	2008				241.0		0.8	0.7											
9	2009				241.0		0.8	1.2											
10	2010				241.0		0.8	1.5											
11	2011				241.0		0.9	2.0											
12	2012				241.0		0.9	2.3											
13	2013				241.0		0.9	2.4											
14	2014				241.0		0.9	2.4											
15	2015				228.9		1.0	2.5											
16	2016				216.8		1.0	2.6											
17	2017				204.7		1.0	2.7											
18	2018				192.6		1.1	2.7											
19	2019				180.5		1.1	2.8											
20	2020				168.4		1.1	2.9											
21	2021				156.3		1.2	3.0											
22	2022				144.2		1.2	3.1											
23	2023				132.1		1.2	3.2											
24	2024				120.0		1.3	3.3											
25	2025				107.9		1.3	3.4											
26	2026				95.8		1.3	3.5											
27	2027				83.7		1.4	3.6											
28	2028				71.6		1.4	3.7											
29	2029				59.5		1.5	3.8											
30	2030				47.4		1.5	3.9											
31	2031				35.3		1.5	4.0											
32	2032				23.2		1.6	4.2											
33	2033				11.1		1.6	4.3	37.8										
34	2034				-		1.7	4.4											
35	2035				-		1.7	4.5											
36	2036				-		1.8	4.7											
37	2037				-		1.8	4.8											

Note: 1) F.C. means foreign currency components and L.C. means local currency components.

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4) The assumed condition of finance is with an interest rate of 2.2% per annum for repayment period of 30 years including a grace period of 10 years.

5) The price escalation of 3% per annum is assumed for the capital cost, O & M cost, and replacement cost of facilities.

6) Annual irrigation water charges are set to cover O & M and replacement cost of irrigation facilities for 25 years.

**L'ETUDE DE FAISABILITE
POUR
LE DEVELOPPEMENT DES RESSOURCES EN EAU
PAR
LES BARRAGES MOYENS DANS LE MILIEU RURALE
AU ROYAUME MAROC**

RAPPORT FINAL

**VOLUME V
RAPPORT DE SOUTIEN (2.B)
ÉTUDE DE FAISABILITE**

**RAPPORT XIX
PROGRAMME DE MISE EN OEUVRE**

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RAPPORT XIX
PROGRAMME DE MISE EN OEUVRE

XIX1 Généralité

Le programme de mise en oeuvre des Projets est présenté dans le Chapitre 11 de Rapport Principal. Donc, on fournira seulement l'information annexe dans ce Rapport annexe XIX.

XIX2 Situation Financière des Ministères Concernés

XIX2.1 Ministère de l'Équipement

Le budget annuel d'investissement du Ministère d'Équipement était approximativement de 2.4 milliards DH pendant les quatre exercices de 1996/97 à 1999/2000 tandis que le budget de Secteur Hydraulique était approximativement de un milliard DH pendant la même période. Le Résumé du budget d'investissement est comme indiqué dans le Tableau XIX2.1.

Le budget annuel pour la construction et la maintenance des grands barrages est comme indiqué ci-dessous. Le tableau montre qu'un coût relativement élevé de maintenance a été allouée chaque année. La proportion du coût de maintenance au coût de construction est presque de 10 pour cent dans l'exercice 1999/00.

Coût de Maintenance et Investissement pour les grands barrages

Année fiscal	Investissement (DH)	Coût de Maintenance (DH)
1995	745,250,000	73,300,000
1996 (1 ^{er} semestre)	348,105,000	29,210,000
1996/97	799,746,000	128,213,000
1997/98	809,698,000	73,208,000
1998/99	608,882,000	91,447,950
1999/00	589,470,000	55,960,000

Une liste de grands barrages construits, en construction et à être construit est présentée dans le Tableau XIX2.3 et le statut actuel des projets de développement de ressources en eau prévu dans le Plan de Développement Quinquennal de Ministère de l'Équipement est comme indiqué dans le Tableau XIX2.4.

Le coût de construction de projet de Taskourt, l'un des plus grands barrages dans cette étude est estimé à approximativement 400 millions DH. C'est environ 40 pour cent de budget annuel du Secteur Hydraulique. Les tableaux XIX2.3 et XIX2.4 montre que le Ministère a plusieurs expériences dans la construction de barrages de grande taille avec des aides financières bilatérales et multilatérales.

Donc, le Ministère a assez de capacité pour manipuler un tel projet de grande taille avec des programmes de financement externes.

XIX2.2 Ministère de l'Agriculture, du Développement Rural et de la Pêche Maritime

Le budget annuel d'investissement du Ministère de l'Agriculture, de Développement Rural et de la Pêche Maritime était approximativement de 2.1 milliards DH pendant les quatre exercices de 1996/97 à 1999/2000. Le Résumé du budget d'investissement est comme indiqué dans le Tableau XIX2.2. La direction de la formation, de la Recherche et du développement, qui a la responsabilité complète de l'extension des activités reliées, a un budget annuel de 42 millions DH. De même, les offices régionaux pour le développement Agricole (ORMVA), qui est responsables du développement d'infrastructure d'irrigation, la promotion et l'amélioration de bétail et des pratiques culturales, ont un budget annuel approximativement de un milliard DH chaque année.

Le coût total de développement d'irrigation des quatre projets de priorité est estimé à 0.5 milliards de Dirhams sur quatre ans. Déterminé à partir du budget annuel de l'ORMVA, le coût ne deviendra pas très lourd si un prêt léger bilatéral ou international est disponible.

XIX3 Coût

XIX3.1 Capital

(1) Barrages

Dans le cas de développement de ressources en eau à grande échelle (GH), 60 % du capital est créé par le Gouvernement selon le Code Agricole D'investissement (C.I.A.). Le reste de 40 % est créé par les fermiers bénéficiaires. Cependant, la loi exempte les fermiers qui ont moins de 5 ha des charges du coût de capital. naturellement, le capital à être créé par les agriculteurs est le coût séparé pour des buts d'irrigation dans le cas de barrages polyvalents.

Dans le cas de développement de ressources d'eau à petite et moyen échelle (PMH), normalement l'investissement est créé par le Gouvernement puisque les secteurs cibles sont moins développés dans la plupart des cas. Il y a quelques cas où et les communes et les villages prennent en charge des petits barrages.

(2) Équipements d'Irrigation

De même pour les barrages, 60 % du capital pour le développement d'irrigation est créé par le Gouvernement dans le cas de GH. Le reste de 40 % est créé par les agriculteurs bénéficiaires selon la taille de terres cultivées. Le paiement sera fait par les deux voies suivant:

- Un seul paiement juste après l'achèvement de la construction, ou

- plan de paiement sur la période de 21 ans (incluant 4 ans de période de grâce) et 4 % de taux d'intérêt.

Dans le cas de PMH, le coût supporté des agriculteurs est négocié, puisque les sites de projet sont moins développés dans la plupart des cas. Normalement le coût créé par les agriculteurs est au maximum 10 % de l'investissement. Cela signifie que la grande partie du coût de développement d'irrigation est créé par le Gouvernement dans le cas de PMH.

XIX3.2 Coût de l'Entretien et de la Maintenance

(1) Barrages

L'entretien et la maintenance (E et M) de barrages sont effectués par le Ministère de l'équipement et les dépenses de l'E et M sont allouées par le ministère de son propre budget.

(2) Equipements d'Irrigation

Les agriculteurs bénéficiaires doivent se charger de 100 % d'E et M et du rétablissement du coût de l'E et M pour les équipements d'irrigation comme les charges d'eau dans les cas de GH et PMH. Ces charge sont rassemblée par l'ORMVA dans le cas de GH et par les associations d'utilisateurs d'eau agricole (AUEA) dans le cas de PMH. Le Tarif de la charge est fixé par le Gouvernement dans les GH et par les AUEA dans les PMH.

Dans le cas de GH, la charge d'eau sera rassemblée auprès de fermiers par des associations d'utilisateurs d'eau agricole. Dès lors la charge sera payée à l'ORMVA et elle sera employée pour l'entretien et la maintenance d'équipements d'irrigation. Une partie de la charge d'eau sera payée par l'ORMVA aux huit agences de bassin à être établi (la première agence de bassin dans Rbia le bassin Oum Er est déjà active). On montre l'organigramme de charge d'eau dans la Figure XIX3.1.

Au Maroc, la charge d'eau pour l'irrigation n'a pas été correctement rassemblée jusqu'ici sauf dans quelques secteurs. Selon l'information du Ministère de l'Agriculture, il y a un bon exemple de système de rassemblement de la charge d'eau dans Loukkos, au Nord du Maroc. Pour mesurer équitablement le volume d'eau employé par chaque fermier, les compteurs individuels d'eau ont été installés. Quoique l'investissement initial pour l'équipement soit grand, la collection de charge d'eau se passe bien et le coût de l'équipement sera recouvert sur plusieurs ans. Dans l'étape de conception détaillée de ce projet, il est recommandé de se référer au système dans le Loukkos.

*L'étude de Faisabilité Pour Le Développement des Ressources En Eau
Par Les Barrages Moyens Dans Le Milieu Rurale Au
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Table XIX2.1 Budget D'investissement du Ministère de l'Equipeement
(from the fiscal years 1996/1997 to 1999/2000)

Unit: Dirham

	1996/1997	1997/1998	1998/1999	1999/2000
00 General Administration	29 000 000	48 200 000	11 815 000	21 060 000
20 General	14 000 000	17 600 000	10 363 170	11 085 500
24 Direction of Personnel Affairs and Formation	5 000 000	5 600 000	3 037 500	5 680 500
25 Hassania School of the Public Works	9 000 000	12 000 000	7 325 670	5 405 000
30 Road Sector	880 000 000	891 000 000	862 433 330	847 110 000
31 Direction of Roads and the Road Traffic	880 000 000	891 000 000	862 433 330	847 110 000
40 Port Sector	412 000 000	340 710 000	380 620 000	405 919 500
41 Direction of Ports and Maritime Public Domain	322 200 000	340 710 000	317 620 000	344 590 000
42 Direction of Ports of Casablanca and Mohammedia	89 800 000		63 000 000	61 329 500
50 Hydraulic Sector	1 060 000 000	1 140 000 000	934 322 000	1 047 240 000
51 General Directorate of Hydraulics	51 390 000		78 505 000	60 365 000
52 Direction of Research and Planning of Water	208 864 000		246 935 000	397 405 000
53 Direction of Hydraulic Planning	799 746 000	809 698 000	608 882 000	589 470 000
60 Public Equipment Sector	26 000 000	21 290 000	16 606 500	15 275 000
61 Direction of Public Equipment	26 000 000	21 290 000	16 606 500	15 275 000
80 Meteorology Sector	37 000 000	41 200 000	33 840 000	32 310 000
81 Direction of National Meteorology	37 000 000	41 200 000	33 840 000	32 310 000
Total Investment Budget	2 458 000 000	2 500 000 000	2 250 000 000	2 380 000 000

Source: Budget D'Investissement Pour L'Annee Budget Aire 1996/1997, Ministère des Travaux Publics

Budget D'Investissement Pour 1997/1998, Ministère des Travaux Publics

Budget D'Investissement Pour 1998/1999, Ministère de L'Equipeement

Budget D'Investissement Pour 1999/2000, Ministère de L'Equipeement

Table XIX2.2 Budget D'investissement du Ministère de l'Agriculture, Développement Rural et Pêche Maritime
(from the fiscal years 1996/1997 to 1999/2000)

Unit: Dirham

	1996/1997	1997/1998	1998/1999	1999/2000
20 Directions for Administrative Character	51 464 200	40 900 000	28 067 500	28 362 500
21 Direction of Administrative and Legal Affairs	42 466 200	32 400 000	21 377 500	19 427 500
22 Direction of Human Resources	8 998 000	8 500 000	6 690 000	8 935 000
30 Direction of Programming and Economic Affairs	65 883 800	22 237 000	21 859 000	20 126 000
40 Technical Directions	503 167 000	587 044 200	329 611 600	375 554 400
42 Administration of Water, Forest, and Soil Conservation	161 750 000	194 936 000	0	0
43 Direction of Protection of Plants Technical Control, and Repression of Fraud	40 705 000	44 881 000	43 056 000	41 122 000
45 Direction of Plant Production	177 352 000	201 627 000	153 170 000	144 343 000
46 Direction of Livestock Farming	115 730 000	139 000 200	125 929 600	182 991 400
47 Direction of Agricultural Public Corporation and Professional Association	7 630 000	6 600 000	7 456 000	7 098 000
50 Direction of Education, Research, and Development	41 783 000	42 200 000	35 445 789	42 105 380
60 Public Establishments of Formation and Research	67 000 000	76 500 000	72 000 000	110 692 000
61 Hassan II Agronomic and Veterinary Institute	11 000 000	10 000 000	13 000 000	21 850 000
62 Meknes Agriculture National School	5 000 000	5 500 000	8 000 000	12 746 000
63 Prince SidiMohamed a Sidi Moussa Ben Ali Technical Institute	1 000 000	1 000 000	1 000 000	2 000 000
64 National institute of Agronomic Research	50 000 000	60 000 000	50 000 000	74 096 000
65 OfficialLaboratory of Analysis and Chemical Research	0	0	0	
70 Rural Civil Engineering	330 778 000	323 561 085	325 516 971	412 649 910
71 Administration of Rural Civil Engineering	23 502 600	25 325 000	21 470 000	19 946 000
72 Direction of Development and Management of Irrigation	54 059 500	38 531 785	44 210 217	43 572 500
73 Direction of Hydro-Agricultural Development	232 785 900	220 081 300	229 093 450	244 382 010
74 Direction of Land Development	20 430 000	39 623 000	30 743 304	104 749 400
80 Regional Offices for Agricultural Security (ORMVA)	939 924 000	1 107 557 715	998 499 140	1 026 644 810
90 Administration of Land Conservation, Land Register, and Cartography			113 000 000	107 000 000
91 General Administration			36 570 000	33 299 700
92 Direction of LandRegister and Cartography			65 870 000	62 484 300
93 Direction ofLand Conservation			10 560 000	11 216 000
Total Investment Budget	2 000 000 000	2 200 000 000	1 924 000 000	2 123 135 000

Source: Budget D'Investissement Pour L'Annee Budget Aire 1996/1997, Ministère de L'Agriculture et de la Mise en Valeur Agricole

Budget D'Investissement Pour 1997/1998, Ministère de L'Agriculture et de la Mise en Valeur Agricole

Budget D'Investissement, Année Budgetaire 1998-1999, Ministère de L'Agriculture, du Développement Rural et des Pêches

Budget D'Investissement, Année Budgetaire 1999-2000, Ministère de L'Agriculture, du Développement Rural et des Pêches

Table XIX2.3 Liste de Grands Barrages Construits, en Construction et à être construit avec l'Aide Financière Externe (Since 1990)

Name of Dam	Construction Period	Construction Cost (million DH)	External Loan (million DH)	Source of Finance
9 Avril 1947	1991 - 1995	496.1	359.3	BAD - BID - OPEC
Al Wahda	1990 - 1998	6 100.0	5 269.8	FADES-Italy-Spain-Russia-FKDEA
Sidi Chahed	1993 - 1997	424.9	358.6	FADES
Hassan II	1995 - 1998	678.6	587.2	FKDEA - BID
Complexe Dchar El Oued Ait Messaoud	1997 - 2001	923.8	810.4	FKDEA - FADES - BID
Ait Hammou	1999 - 2002	438.5	350.8	FADES - BID
Sidi Said	2001 - 2003	760.0	570.0	FKDEA
Raouz	2001 - 2004	510.0	-	
Complexe Sidi Mohamed Ben Abdellah/Ouljet Benikhemiss	2002 -	900.0	approximately 80 % of construction cost	

Note: Construction Cost includes facility cost only.

BAD: African Development Bank

BID: Islamic Bank of Development

OPEC: Organization of Petroleum Exporting Countries

FADES: The Kuwaiti Fund

FKDEA: The Kuwaiti Fund of Economic Development

Table XIX2.4 Statut actuel de Projets de Développement de Ressources en eau dans le Plan Quinquennal de Développement du Ministère de l'Équipement (1999 / 2003)

Name of Dam	Location	Implementation Period	Project Cost (MDH)	External Finance (MDH)	Source of Finance	Observation
Bouhouda	Taounate	1995-98	127	0	-	Completed.
Complex Dcahr El Oued A't Messaoud	Beni Mellal	1997-2001	924	810.4	FKDEA - FADES - BID	Under implementation.
Ait Hammou	Agadir	1999-2002	439	17 MDK	FADES - BID (electromecanic)	Under implementation, 1 DK = 30 DH
Chakoukane (continuation)	Taroudant	2001-2002	32	(2)	FAD	Total project cost = 330 MDH
Adarouch	Ifrane	2003-2006	186	(2)	FAD	
Sidi Saïd	Khénifra	2001-2003	760	20 MDK	FKDEA	
Raouz	Tetouan	2001-2004	510	-	-	Searching for finance
(SMBA + Beni Khemiss) complex (1)	Rabat	2001-2004	900	-	-	Searching for finance
Wigrane	Marrakech	2002-2004	650	-	-	Searching for finance
Imizer	Haouz	2001-2004	-	-	-	Searching for finance
Ait M'zal	Chtouka	2001-2003	183	0	-	
Igouzoulane	Essaouira	2001-2003	395	0	-	
Iffassiyene (5)	Al Hoceima	OP :2007	1 100	-	-	Too expensive
Emsa	Tetouan	OP : 2010	-	-	-	
Safi canal	Safi	-	-	-	-	
Ouljet Soltane	Khemisset	OP	-	-	-	
Zerrar	Essaouira	OP	700	-	-	
Bousfoul	Taounate	OP	-	-	-	
Assayad	Guelmim	OP	782	-	-	
Mechraa lahjar	Sidi Kacem	OP	-	-	-	
Ain kwachia	Ben Slimane	OP	90	-	-	
Touizgui Ramz	Guelmim	OP	93	-	-	
Boulaouane	Chichaoua	OP	182	-	-	
M'dez-Ain Timedrine	Sefrou	OP	1 400	-	-	

Note: FKDEA: The Kuwaiti Fund of Economic Development

FADES: The Kuwaiti Fund

BID: Islamic Bank of Development

FAD: French Agency for Development

Calculation of Loan Amount = ((GC+EM+Et)/1.14)*0.0

OP means Out of Plan or postponed

(1): SMBA + Beni Khemiss : Sidi Mohammed Ben Abdella surelevation & Beni Khemiss dam complex

(2): Loan for Adarouch, Chakoukane & Bab Louta : 250 MDH

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